SERVING THE FERTILIZER INDUSTRY 50 YEARS

Commercial Fertilizer

and PLANT FOOD INDUSTRY

JUNE
1960

It Pays to Check Your Equipment

SEE PAGE 20

sleek...
trim...
and perfectly coordinated!

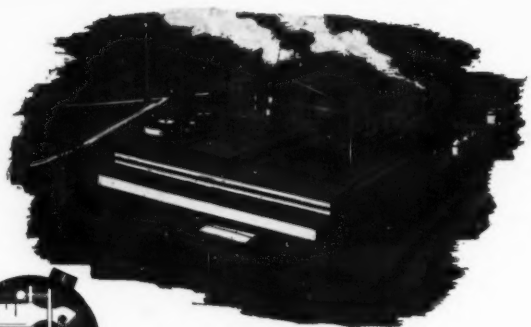
That's our new 300,000 sq. ft. multiwall bag plant at St. Marys, Ga.

Like the building itself, our equipment is new and the very latest in mechanical efficiency.

This fully integrated plant has every facility for turning out every kind of multiwall bag . . . open mouth or valve, sewn or pasted, stepped-end, and our own patented Kraft-lok® valve; also bags with special inserts, sleeves, protective linings or outers, and vapor barriers.

The best in multiwall bags—are Kraft Bags!

. . . and the best in open mouth bag filling machines is The Kraftpacker, for which we are exclusive sales agents.



Paper Mill at St. Marys, Ga.

KRAFT BAG CORPORATION
Gilman Paper Company Subsidiary
630 Fifth Avenue, New York 20, N. Y.
Daily News Building, Chicago 6, Ill.

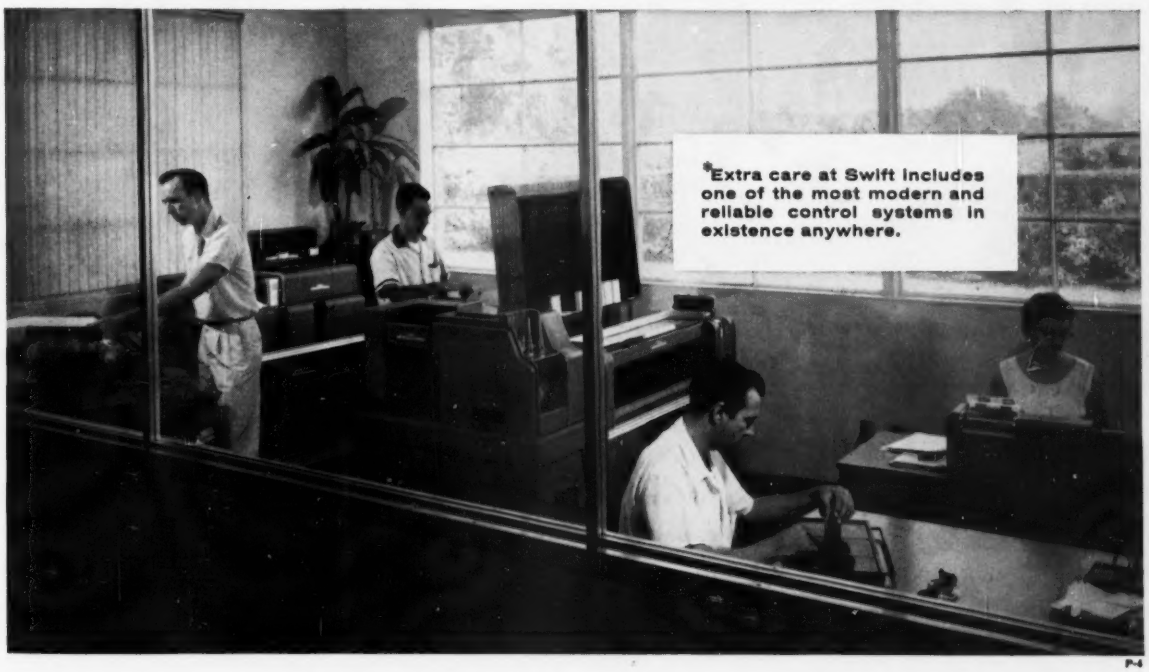
☐ We would like to know more about Kraft Bag Multiwalls.
☐ We would like to know more about The Kraftpacker.

COMPANY NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____
PRINCIPAL_____
PRODUCT MFD._____

CF

Intensive customer service . . .
part of the extra care* behind

SWIFT'S PHOSPHATES



Swift's *extra care* is just as real as is the staff that provides it. Take Customer Service, for example. This is the department to call when you want information on cars shipped, car numbers, dates and routing. With the support of a modern, precise control system you get accurate up-to-the-minute information promptly. And this is just one part of the whole Swift organization dedicated to providing better phosphate service.

Swift's extra care can help you even better satisfy your customers . . . your plant operations . . . and your profits. It's worth checking! Have a Swift Phosphate Center Representative outline the advantages Swift offers you in phosphates—Triple, rock or ground rock.

THE SERVICE CENTER FOR ALL YOUR PHOSPHATE NEEDS

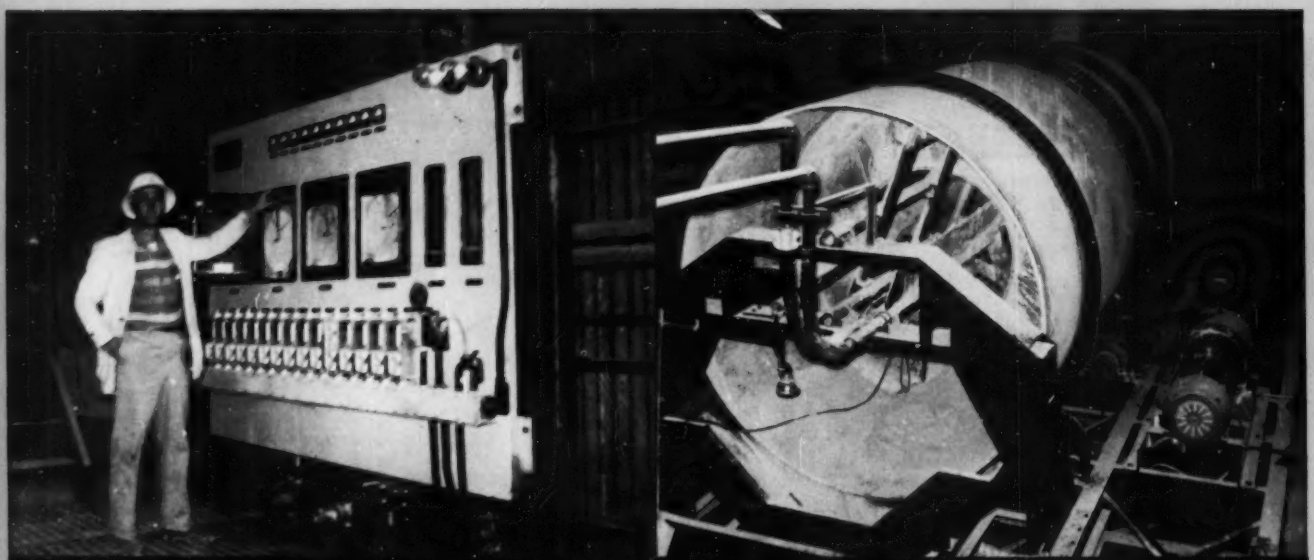
SWIFT & COMPANY
PHOSPHATE CENTER

Bartow, Florida

Swift
105TH YEAR

To Serve Your Industry Better WITH PHOSPHATE ROCK,
GROUND PHOSPHATE ROCK AND MINUTE MAN TRIPLE SUPERPHOSPHATE

ANOTHER BIG WEATHERLY PLANT WITH



CONTROLLED GRANULATION

CONTROL: Shown above, Superintendent Harold Green setting flow controller for N solution. This panel controls the entire plant: flow of all liquid raw materials; automatically holds temperature at level desired. Starts and stops all motors and indicates if running or not; ammeters check each motor to avoid overload.

GRANULATOR: This is the TVA Ammoniator Granulator—7′ by 14′. It produces 40 tons per hour and is the largest granulator capacity in the South. All liquids and solids mixed, reacted and recycled emerge as granules with complete uniformity—through 6 and 16 mesh screen—guaranteed, as is the production rate.

OUR PLANTS PURR LIKE KITTENS

The plant illustrated and described was designed and erected by Weatherly for Cotton Producers Assn., Cordele, Ga. The complete building and equipment were erected and placed in operation in five weeks—from the ground up. It will produce the full range of grades—lowest to highest—from conventional materials.

Weatherly Controlled Granulation plants, with capacities from 20 to 60 tons per hour, have proven the superiority of this process over a 6-year period.

We will be glad to discuss your needs with you.

The D. M. WEATHERLY COMPANY

Industrial Engineers and Builders

80 Eleventh St., N.E., Atlanta, Georgia Phone: TRinity 5-7986

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and PLANT FOOD INDUSTRY

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Commenting Freely

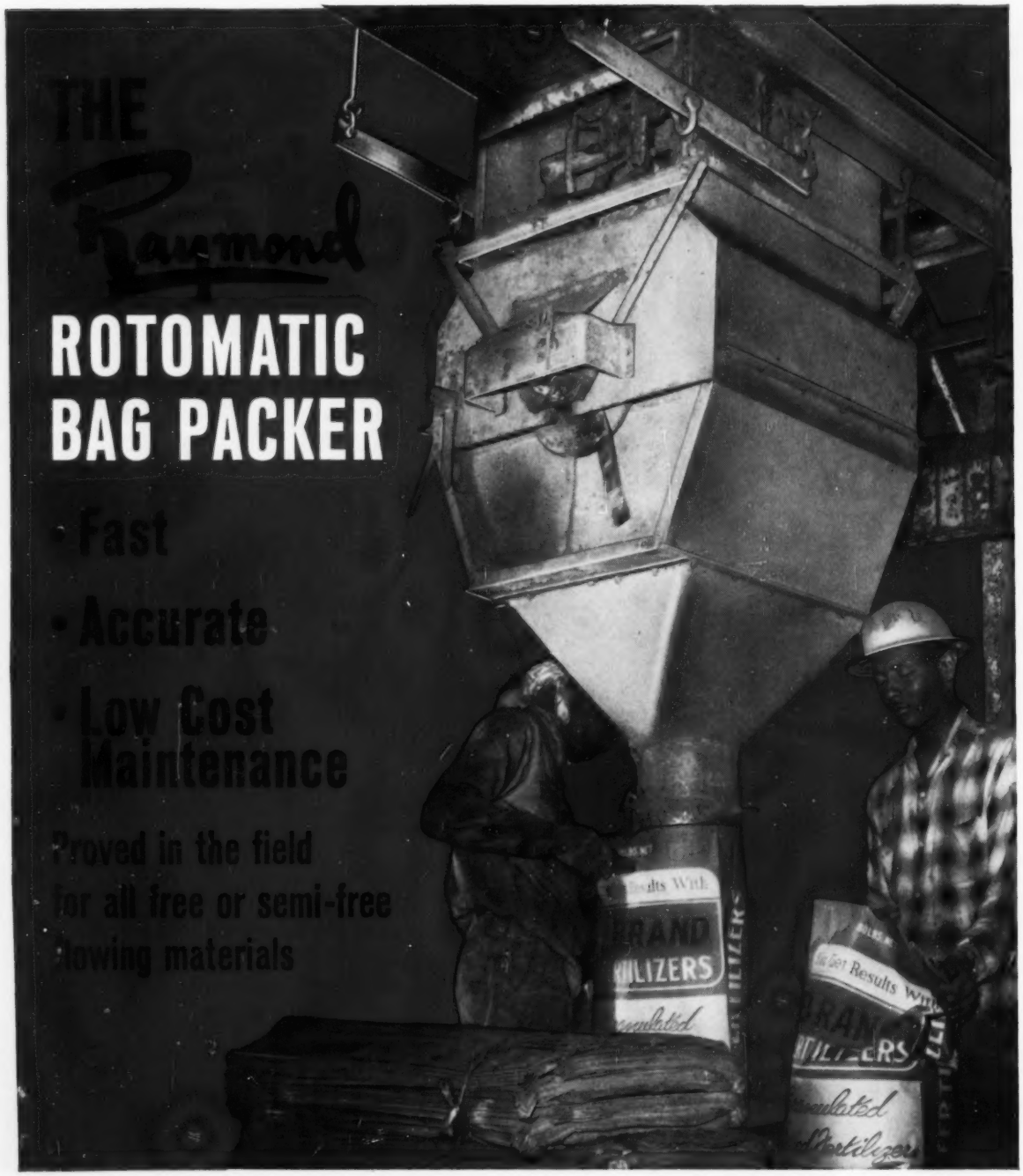
by BRUCE MORAN

From our vantage point, which embraces reports from all over the world, it is encouraging to see how firmly the need for plant food is taking hold in even the least developed areas. Peasants, who have painfully scratched a meager living out of near-sterile land, are being supplied with fertilizer.

Some of it is imported from other lands—but, step by step, the backward areas are finding the money and the energy and the borrowed skill to set up what they call fertilizer "factories" to partially supply the growing demand.

It is this demand which is most heartening. It means that the peasant is beginning to climb up out of his peasant-hood, eventually to become a self-sufficient citizen of the world. As his income rises he will contribute to the whole economic world picture a great new market for the things which now are dumped in other countries.

The problems of international commercial competition will straighten themselves out . . . and fertilizer will have been the key.



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"Maker of RUGGED MULTIWALL PACKAGING for Industry"

JUST AROUND THE CORNER

By Vernon Mount

Summit blowup has caused a healthy new respect for the ideas of the Civil Defense people. With all the talk about peace, and relaxing of international tensions, these earnest folks have had a tough time establishing the basic principles of safety in the public mind.

Inquiries have been pouring in to local CD offices: How to get out of town fast; what foods to store; what first aid methods must be readied...and so on, a series of questions that have not been in the forefront of the public thinking for a long, long time.

Not that there seems any real danger of a war. The USSR knows the ready-to-spring position of our long-range air force, and our ring of shorter-range missiles. They know that quick retaliation will just bury the whole world under atomic fall-out.

But it does seem smart, and it is smart, to brush up on the measures to take- and to take some of them, just in case. All that is required is for one very angry man to push the right button, and all those measures can be vital to preserving at least a portion of our population.

Yours faithfully,

Vernon Mount

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41 plants of The A.A.C. Co., located in the United States, Cuba and Canada, assure you dependable, fast deliveries of AA quality products for farm and industry. You can schedule your production with confidence . . . the right quantity and grade will be at your plant when you need it.

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AA QUALITY

GENERAL OFFICE: 100 Church Street, New York 7, N.Y.

last year over 125 firms received greater merchandising impact from their multiwalls thru UNION-CAMP'S

BAG DESIGN

another FREE service of the ★ Star Packaging Efficiency Plan!

Over 125 multiwall users last year cashed in on the bag design feature of the 5-Star Packaging Efficiency Plan. In some cases UNION-CAMP artists came up with striking new bag designs which contributed to increased sales. In others they created a family of high-recognition designs for a complete product line. In still others they developed simplified, faster-reading identification prints —resulting in thousands of dollars worth of savings.

Through the 5-Star Plan, UNION-CAMP artists and designers may help you achieve greater merchandising impact from your multiwalls. Their services are free.

Besides bag design this comprehensive packaging service offers you major money-saving improvements in bag construction, specifications control, packaging machinery and materials handling.

See your local UNION-CAMP man for details.

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MULTIWALL BAGS
Union Bag-Camp Paper Corporation · 233 Broadway N.Y. 7, N.Y.

★ BAG DESIGN · BAG CONSTRUCTION · SPECIFICATIONS CONTROL · PACKAGING MACHINERY · PLANT SURVEY

It takes a lot of fertilizer

(and we can supply any kind you need!)

For instance: Ammonium Nitrate . . . Ammonium Nitrate Limestone (Neutramon) . . . Ammonium Sulfate . . . Ammonium Sulfate Nitrate . . . Baltimore Sludge . . . Bone Meal . . . Calcium Nitrate . . . Calmonite . . . Castor Pomace . . . Chicago Sludge . . . Copper Sulfate . . . Diammonium Phosphate . . . Dicalcium Phosphate . . . Dried Blood . . . Liver Meal . . . Lupin Meal . . . Magnesium Sulfate . . . Muriate of Potash . . . Nitrogenous Tankage . . . Peruvian Bird Guano . . . Potassium Nitrate . . . Sulfate of Potash (Beet Residue) . . . Superphosphate (Single & Triple) . . . Tobacco Stems . . . Tung Pomace . . . Urea . . . Urea-Formaldehyde . . . and Zinc Sulfate . . . to name just some of the fertilizer materials quickly obtainable from H. J. Baker.

As a matter of fact, H. J. Baker is ready with each and every type of fertilizer material in any quantity that you might want. May we supply you? Write for further information and samples.

Established 1850

H.J.BAKER&BRO.,Inc.

600 FIFTH AVENUE, NEW YORK 20, N. Y.

OFFICES IN CHICAGO • TAMPA • SAVANNAH • ATLANTA

—Market Notes—

● Tobacco companies, despite much-publicized efforts to link smoking with lung cancer, are calmly proceeding with major expansion projects anticipating a 53% sales increase in 15 years, according to a recent study by CHEMICAL WEEK magazine.

This should be good news to the fertilizer industry, as their article itemizes plant food requirements of tobacco crops ("1½ million acres on 510,000 farms in 24 states") and tallies the total U. S. use of commercial fertilizers on tobacco as a million tons annually.

● The same publication, in a sales forecast on garden chemicals, points to Wasatch Chemical Company, fertilizer mixer at Salt Lake City, which increased its 1959 sales of garden chemicals 40% over the preceding year. General manager Lawrence Thatcher credits much of the boost to a half-hour once-a-week TV garden clinic featuring Wasatch horticulturist Arvil Stark who demonstrates a gardening problem, then solves it with one of their 'Morgro' products. The show, now in its third year, runs 13 weeks and is video-taped for showing in 11 Western states. One of the big TV benefits, according to Mr. Thatcher, is that dealers can see the support they are being given.

● After an enthusiastic reception in test-market areas Virginia Carolina Chemical is selling 'Lawn Builder' in 31 cities throughout the Southeast, Mid-west, and Northeast. Lawn Builder, a 16-8-8 fertilizer, is packaged in a new green, white, and red bag, and is being made in Fort Wayne, Ind., Wilmington, N. C., Cincinnati, Ohio, and Baltimore, Md. Directing its sales is Specialty Products Manager Wallace La Prade, former V-C sales manager in Orrville, Ohio, who has made extensive studies of off-farm fertilizer consumption.

● Both golf courses and baseball fields have many similar problems as far as turf grasses are concerned. The turf must be luxurious, and grow evenly during the entire growing season. Matty Schwab, Jr., grounds supervisor for the Giants at Candlestick Park, San Francisco, is using 20 lbs. of granular-type 'Nitroform' per 1,000 sq. ft. in the infield, after a careful soil analysis by their fertilizer supplier, Agriform of Northern California. Nitroform, a urea-form product, is manufactured by Hercules Powder Company at Woonsocket, R. I. and by the end of this year will also be made at the company's plant in Hercules, Calif.

● Embarrassing to the uninitiated could be the fact that the city of Milwaukee uses considerably more Smith-Douglass' 'Sacco' than 'Milorganite,' an organic fertilizer manufactured by the Milwaukee Sewage Commission, and even finds it cheaper. But City Forester Gordon Rayner has the answer, says Sacco is used mostly in flower beds because of greater phosphate and potash content, whereas Milorganite is used on grass. The city buys about 40 tons of Sacco a year; uses about 10 tons of Milorganite.

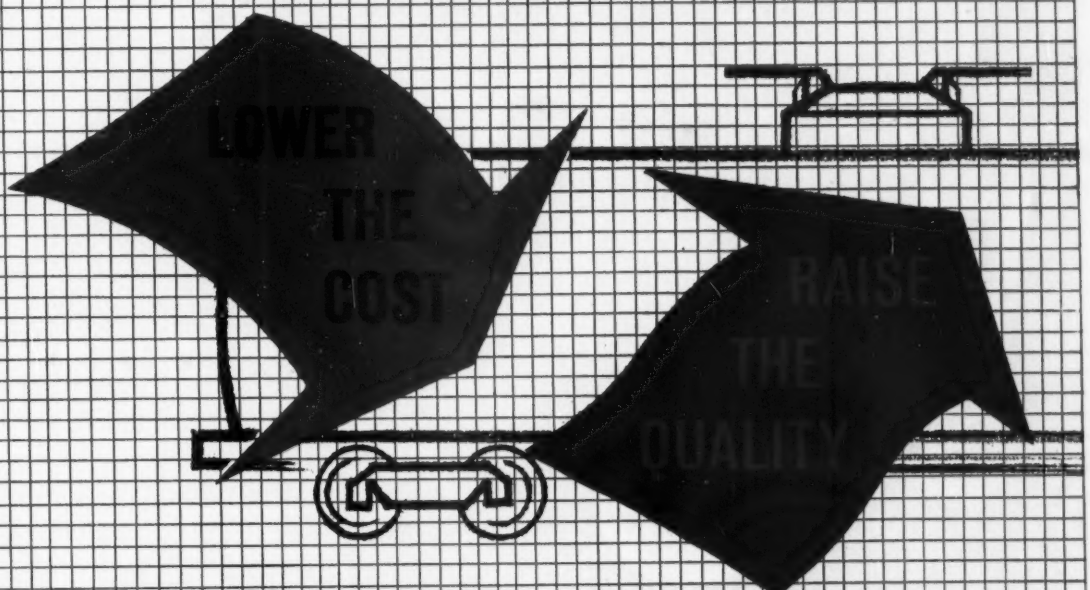
● Florida phosphate exports reached a new high last year—over 3 million tons of rock. Figures released in May by Florida Phosphate Council show marketable production during '59 exceeded 11 million tons, export tonnage accounting for 28 per cent of the total.

● Farm land values increased sharply during the year ended March 1 according to an Agriculture Department survey. Adance in values averaged about 3 per cent as a whole with Georgia, Massachusetts, Rhode Island and Washington leading with increases of 7 per cent each. A further increase is expected during the current year but at a slower rate. Market value of the nation's farm land and buildings was estimated at $129,100,000,000.

DRI-SOL

ADVANCED, NEW NITROGEN SOLUTIONS

developed by Commercial Solvents Corporation



OF YOUR MIXED FERTILIZERS

It's a pleasure to tell you about the new, exclusive (patents pending) DRI-SOL Nitrogen Solutions. This new line represents a significant advancement in ammoniating solutions. In making mixed fertilizers, you will find the performance of these solutions quite impressive. You can count on at least 7 distinct benefits:

1. Reduced shipping costs. 2. Better process control in continuous ammoniation. 3. Lower formulation costs. 4. Lower drying costs, increased dryer capacity, or a drier product. 5. Increased plant capacity. 6. Faster curing and quicker shipment. 7. Improved quality of both conventional and granular fertilizer.

In addition to these 7 advantages, you may find still other ways in which these unique DRI-SOL solutions can be useful to you. For example, these solutions can be used to help offset the high water content of low strength acid, or to produce those grades which are difficult or impossible to make with conventional solutions.

CSC's DRI-SOL Nitrogen Solutions are available in grades ranging from 24% ammonia and 76% ammonium nitrate to equal parts by weight of ammonia and ammonium nitrate. This new line of solutions is essentially anhydrous. Water content: about 0.5%.

DRI-SOL solutions are generally available in the Southern and Midwestern States. Technical literature available to fertilizer manufacturers.

AGRICULTURAL CHEMICALS DEPARTMENT

COMMERCIAL SOLVENTS CORPORATION CSC

260 Madison Avenue, New York 16, N. Y.

★Please send me technical data on CSC's new DRI-SOL Nitrogen Solutions. The solutions numbers I am currently using are:_____

_____

The bulk of my mixed goods tonnage is made up in the following grades:_____

NAME_____

TITLE_____

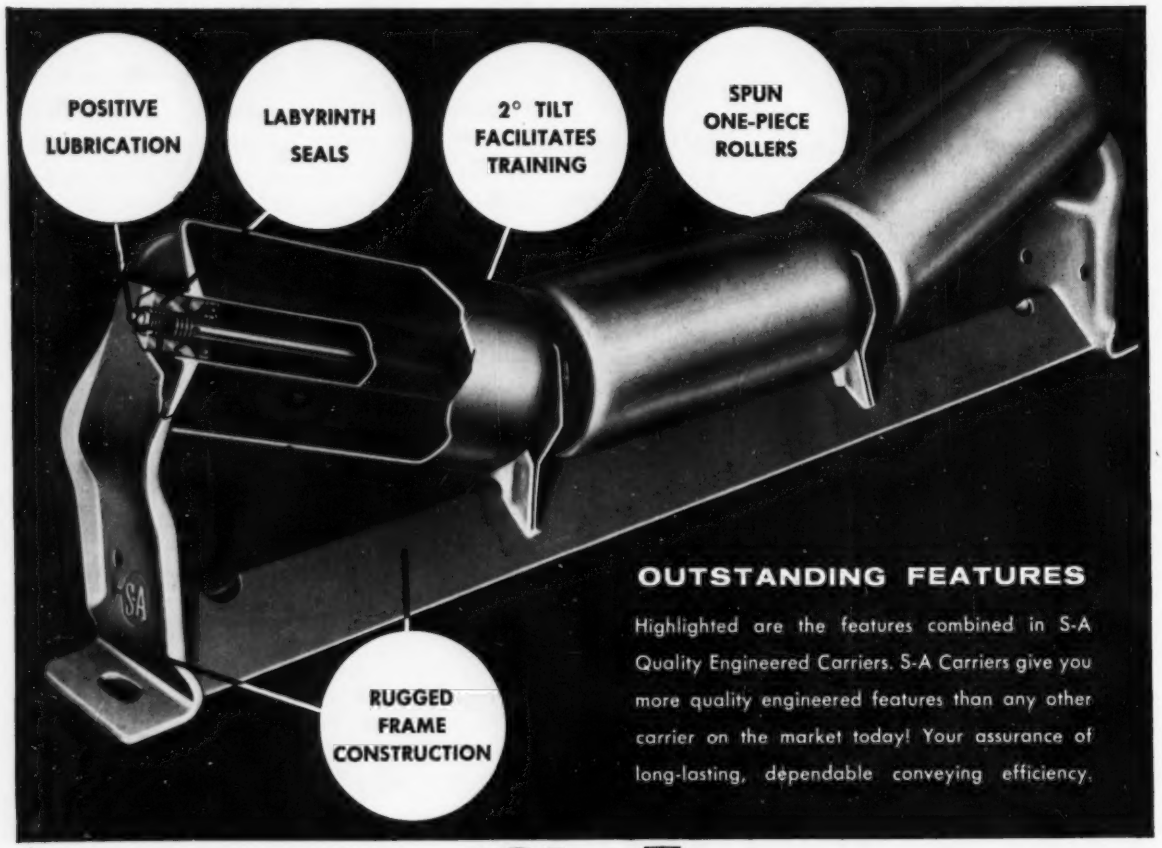
COMPANY_____

STREET_____

CITY_____ ZONE_____

STATE_____

MORE PROFIT PER TON FOR YEARS TO COME!



OUTSTANDING FEATURES

Highlighted are the features combined in S-A Quality Engineered Carriers. S-A Carriers give you more quality engineered features than any other carrier on the market today! Your assurance of long-lasting, dependable conveying efficiency.

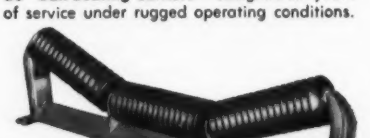
STEPHENS-ADAMSON

Quality Engineered CARRIERS

Maximum conveying efficiency and profitable bulk handling over the belt depends on what's under the belt in quality-engineered conveyor components. No single component has a greater bearing on conveyor performance than the carriers, carrying the load. The combination of features you see highlighted in the cutaway view above, are available in no other carrier on the market. The result is smooth performance, simplified and reduced maintenance, longer carrier life and less handling cost per ton. STEPHENS-ADAMSON Carriers are available in a wide range of sizes in both ball and roller bearing carriers . . . stocked for immediate delivery.

WRITE FOR CARRIER BULLETIN 355
WRITE FOR PULLEY BULLETIN 558

20° Ball Bearing Carriers—designed for years of service under rugged operating conditions.



Rubber Disc or Pneumatic "Impact" Carriers for use under loading spouts in belt or shuttle conveyors, or feeders to cushion the lumps.

"Curve Crown" Pulleys — S-A exclusive CURVE CROWN PULLEY design and SQUEEZELOCK HUB assure maximum belt training effect, gripping power for full torque transmission, minimum belt stretch and wear.

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ENGINEERED BULK HANDLING SYSTEMS
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BELLEVILLE, ONTARIO

Arcadian® News

Volume 5 — For Manufacturers of Mixed Fertilizers — Number 6

"It's a pleasure to serve you!"

"The 1959-60 fertilizer season has been a difficult one. Exceptionally cold weather in the Southeast delayed the start of the season in that area, and the heavy movement began in the Midwest as soon as it did in the Southeast.

"This overlapping placed a heavy strain on our tank car supply and, in spite of the fact that in the past year we spent several million dollars for additional storage, it has been difficult for us to keep up with shipments.

"Unfortunately, we must arrange for cars a year ahead of time and to make accurate estimates that long in advance is extremely difficult—especially since our estimates may be affected, as they have been this year, by weather conditions. You may be assured, however, that we will always do our best to give our customers the service they deserve.

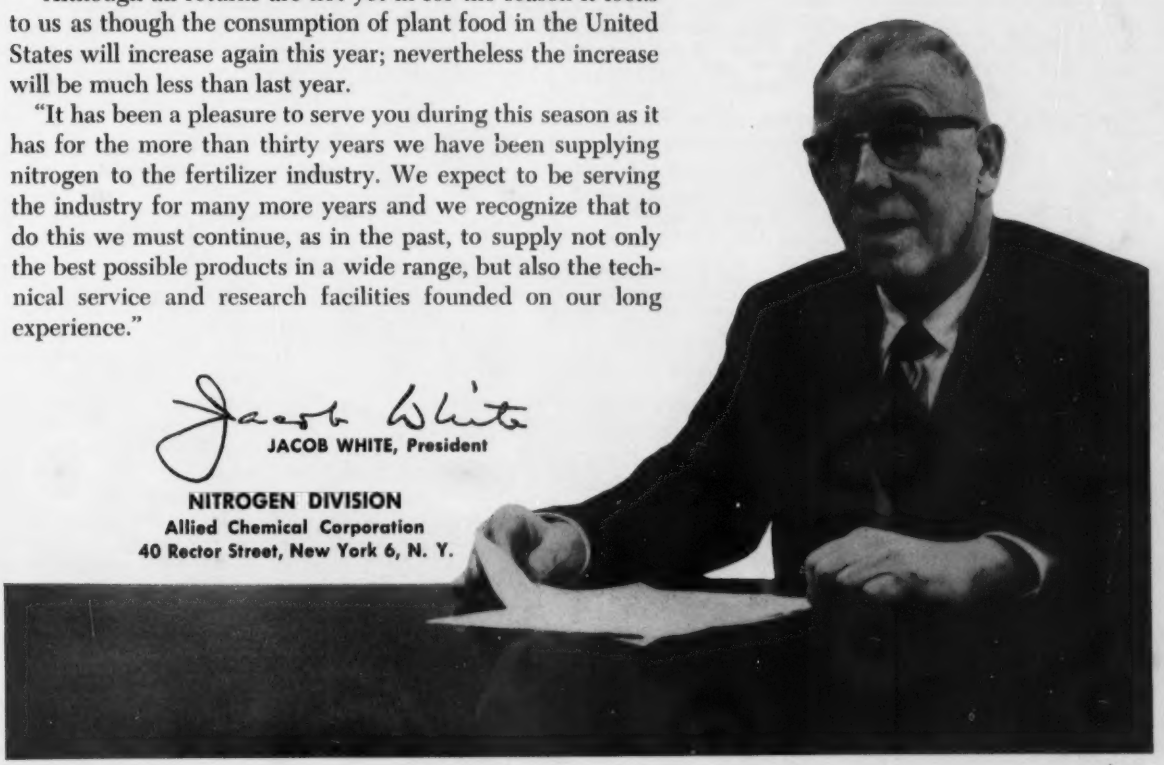
"Although all returns are not yet in for the season it looks to us as though the consumption of plant food in the United States will increase again this year; nevertheless the increase will be much less than last year.

"It has been a pleasure to serve you during this season as it has for the more than thirty years we have been supplying nitrogen to the fertilizer industry. We expect to be serving the industry for many more years and we recognize that to do this we must continue, as in the past, to supply not only the best possible products in a wide range, but also the technical service and research facilities founded on our long experience."

Jacob White

JACOB WHITE, President

NITROGEN DIVISION
Allied Chemical Corporation
40 Rector Street, New York 6, N. Y.

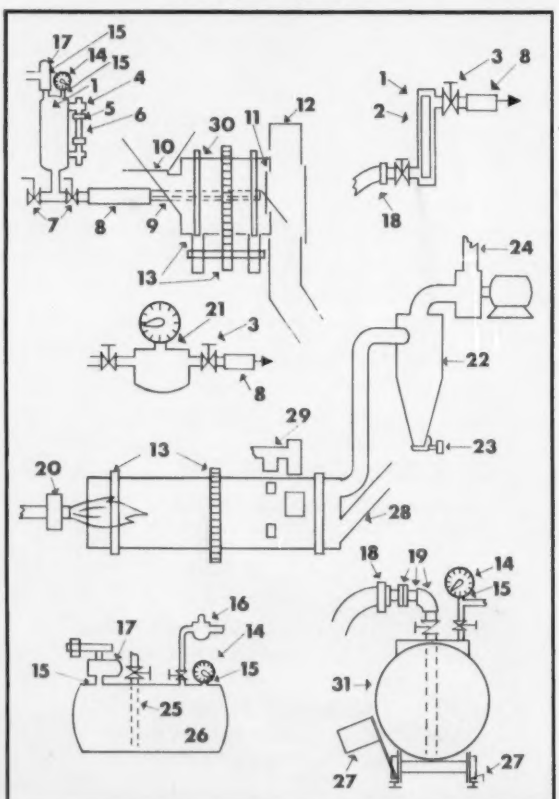


Arcadian News for Fertilizer Manufacturers . . . . . from NITROGEN DIVISION

Handy check list for your equipment

Here are some of the points to check to insure safe and efficient operation:

Action Needed	OK		
☐	☐	1	Measuring tanks, rotometers — use correct specific gravities.
☐	☐	2	Rotometer. Check float for wear and corrosion. Shield against breakage. Avoid mechanical strains and shocks of starting and stopping.
☐	☐	3	Throttle on discharge side—to minimize vaporization of nitrogen solutions.
☐	☐	4	Gauge glass connections—fittings—free for easy cleaning. Dirt here causes faulty proportioning.
☐	☐	5	Extra gaskets for gauge glasses.
☐	☐	6	Clean glass tubes. Make sure you have spare tubes. Add guards.
☐	☐	7	Valves. Check for wear. Have spare parts on hand. Overhaul annually.
☐	☐	8	Rubber hose to reduce vibrations.
☐	☐	9	All distributor pipes for design and condition.
☐	☐	10	Mixer inlet gate for leakage.
☐	☐	11	Mixer discharge door for leakage.
☐	☐	12	Rotary batch mixer. Avoid suction in mixer.
☐	☐	13	Tires, trunions, ring gears and pinion for alignment, wear and safeguards.
☐	☐	14	Pressure gauges—for ammonia service?—accurate? Do not let pressure continue to rise. These are not clocks.
☐	☐	15	Location of gauges and safety valves on storage tanks. If connected into or near high velocity air line, they are not accurate during movement of air.
☐	☐	16	Pressure regulators. They are not safety devices.
☐	☐	17	Pressure and vacuum reliefs. Check operations. Remove weights unofficially added.
☐	☐	18	Hose connections. Adequate stainless steel bolted clamps. Safe if loosened under pressure?
☐	☐	19	Tank car connections. Stainless steel and short for strength and permanence. Use elbows to avoid hose kinks.
☐	☐	20	Dryer burner—clean, adjust, and check controls. Synchronize with drying load. Question unusual demands on the dryer.
☐	☐	21	Displacement meters. Lose accuracy at low rate of flow and with gas bubbles. Avoid strains and shocks.
☐	☐	22	Dust collector. Check for condensation, caking, deterioration, overloading. Clean fan blades.
☐	☐	23	Check for air leaks at dust collector discharge.
☐	☐	24	Stacks. Check for fouling, corrosion, and build-up.
☐	☐	25	Storage tank dip pipes. Check for leaks.
☐	☐	26	Tanks. Check for weakening by corrosion, and failure of any coating or lining.
☐	☐	27	Tank cars. Always blue flag and block wheels.
☐	☐	28	Large air leaks at material inlet of countercurrent dryers severely handicap the dryer.
☐	☐	29	Safeguards for hammers and other parts when working or falling off.
☐	☐	30	When using acids make certain all mixing is uniform for safety and good analyses.
☐	☐	31	Compare production records with shippers weight for quick check on outrun or for troubles in the process.



OTHER PRECAUTIONS: Make sure operators have proper training and instruction. Equip them with rubber gloves and goggles. Have good lighting and safe exits. Keep safety literature handy. Have gas masks and a supply of water for emergencies. Emergency shower baths should be freeze-proof and warm for cold weather.

Arcadian News for Fertilizer Manufacturers . . . . . from NITROGEN DIVISION

NOW is the time to sell PASTURE FERTILIZERS

A well-known soil scientist says "We don't have pastures, we have playgrounds for cattle!" And there are more acres of grassland and pasture than of any other crop. Good, well-fertilized pastures can produce milk cheaper than any other source of feed. And good pastures can produce as much feed value as corn but they need as much fertilizer as corn.

June—after the first flush of spring growth is grazed off—is an ideal time to push mixed fertilizers for grass and legume pastures. Analyses, such as 16-8-8, 15-10-10, 12-12-12 and 10-10-10 are excellent fertilizers for pastures now.

Sell 12-12-12, 10-10-10 or 15-10-10 as soil builders to raise the level of phosphorus and potash in the soil. Then sell 16-8-8 to keep production at high levels by replacing the plant food as it is used.

Early summer fertilization brings on strong second growth of grass as well as legumes to keep green feed coming along through the hot months. Even when the ground gets dry, the extra growth is already there to provide grazing. Where pastures can be irrigated, summer fertilization produces a big tonnage of nutritious grazing, with up to 18 to 20% protein content.

In most states the best farmers are now applying fertilizer several times during the years—fall, early spring, and June. The better farmers apply fertilizer after each hay cutting. With irrigation or high rainfall, good farmers will apply mixed fertilizer after each grazing period. Add some customers like this and you'll be busy during the slack season. Mid-season applications of plant food are often straight nitrogen but the evidence shows that potash is more efficient if applied frequently. When you promote high-nitrogen mixed fertilizers such as 16-8-8 or 15-10-10 you provide a balanced complete program at every application.

Technical Tips

UREA HELPS PULVERIZED FERTILIZER PRODUCTION

More and more producers are discovering the advantages of the urea-ammonium nitrate-ammonia-water solution over the conventional ammonium nitrate-ammonia-water formula. Let's examine the reasons why this addition of urea is so beneficial to fertilizers.

At the outset, let us agree that the term "pulverized fertilizer" embraces only those fertilizers that are processed on a once-through basis, with no mechanical drying, and under moisture and temperature conditions that produce little or no agglomeration. In general, no or hardly any acid is used in formulation. Nitrogen solution is used to the extent of the capacity of the superphosphates to react with the free ammonia; ammonium sulphate is generally used to provide any additional nitrogen that might be desired.

Greater Flexibility

One of the principal reasons why the urea-ammonium nitrate-ammonia-water solution is to be recommended is the greater flexibility it allows in formulation. For example, this type of solution makes it possible to have a lower percentage of free ammonia for a given nitrogen total without increasing the salting-out temperature. Also, for the same free ammonia and the same nitrogen total, the presence of urea permits a solution of much lower salting-out temperature. This could be a major advantage to mixers faced with winter temperatures and no heat.

Improves Condition

Another reason for using a urea-added solution is the fact—backed by many case histories in the industry—that the use of a limited amount of urea in some pulverized grades results in improved condition of the product. At the very least, the use of the urea-added solution provides the mixer of such fertilizer grades with a convenient way of including urea in his formulation without the bother of storing and processing an additional raw material.

Past experience has shown several reasons for the observed improvement in product condition when a urea-added solution is used. One is the effect of urea on the crystallization of ammonium chloride. Here the urea acts to suppress the tendency of ammonium chloride to form a network of interlocking needle-like crystals which are thought to promote caking. Also, the decreased vapor pressure of fertilizer made with urea solutions reduces the degree of drying out in storage. This results in fewer crystal bridges being formed between particles, thus making a softer material.

Increased Nitrogen Solubility

A third reason for using urea is the greater solubility of total nitrogen in the urea-added solution as compared to the ammoniating solution with the same free

(continued on following page)

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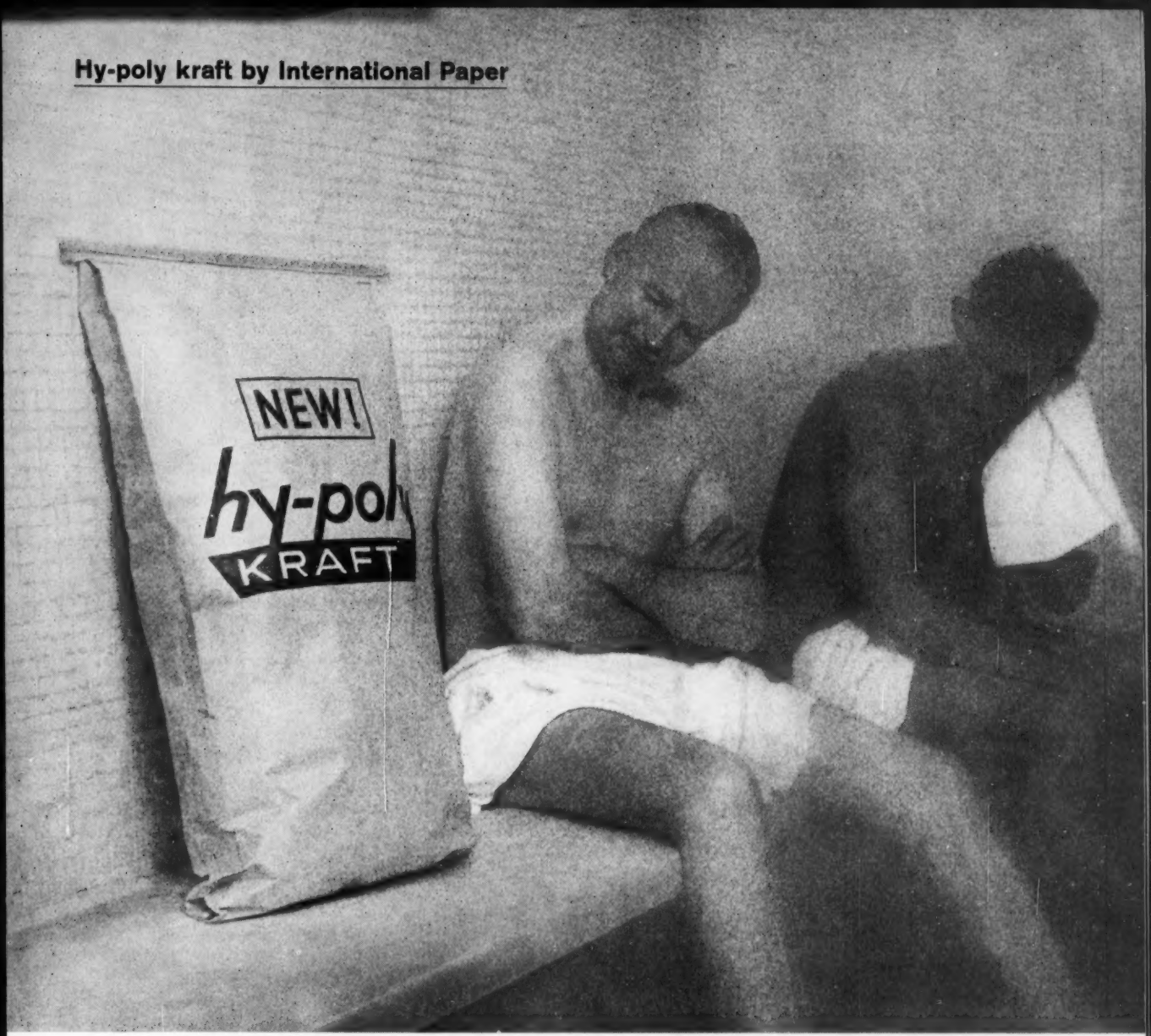
ammonia content but without urea. It's also true that once the free ammonia in comparable solutions has been reacted in the mixer, the remaining urea-added solution has a much lower salting-out temperature than the non-urea solution. To illustrate: a solution containing 34% free ammonia, 60% ammonium nitrate and 49% total nitrogen would salt out at 212°F after the free ammonia is removed. A solution of the same total nitrogen but composed of 33% free ammonia, 45.1% ammonium nitrate and 13% urea would salt out at 117°F after removal of free ammonia. It's quite possible that this property of increased solubility could result in more uniform distribution of nitrogen on the other fertilizer solids, particularly where mixer temperatures are low.

While admitting all these benefits of using a urea-ammonium nitrate-ammonia-water solution in preference to the conventional ammonium nitrate-ammonia-water solution, dissenters point out that urea-added solutions are more hygroscopic than non-urea solutions. This cannot be denied, but the fact is, for many pulverized fertilizer grades, increased hygroscopicity has actually shown definite advantages. Accordingly, we can conclude that pulverized fertilizer manufacturers would be well advised to use urea-added solutions for just about every grade they produce.

Hy-poly kraft by International Paper



This "Hy-poly" Bagpak® multiwall was given a 360-hour Turkish bath to demonstrate its moisture-resistant properties.

Trial by steam bath!

Read how new humidity-proof Hy-poly kraft makes medium- and low-density polyethylene sheets extravagant by comparison.

THE multiwall bag in our picture is made of Hy-poly kraft. It contains *calcium chloride*.

International Paper steamed this multiwall in 90% relative humidity at 100° F. for 360 hours! (Unprotected, under these conditions, calcium chloride takes on 2½ times its weight in water in about an hour.)

But when the bag was opened, the thirsty crystals spilled out as though they had been stored in the middle of the Sahara!

Bagpak's Hy-poly kraft is not only humidity-proof. It *saves money*, too. Savings range from $2 to $16 per thousand multiwalls.

Hy-poly kraft is so superior to medium- and low-density PE sheets that you get equal, if not greater, moisture-vapor protection from a coating about *half as thick!*

This dramatic new barrier sheet is a product of 62 years of papermaking and packaging experience. It is only part of a *complete* multiwall packaging service offered to you by International Paper.

Whatever your multiwall packaging needs, it will pay you to talk to your Bagpak packaging engineer. He has complete information. It's yours for the asking.

INTERNATIONAL PAPER

BAGPAK DIVISION • NEW YORK 17, N.Y.

National Plant Food Institute Meets June 12-15

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Among the Speakers to Appear at NPFI Meeting

Hardin Thomas Motley Bohlen Beal Renick Everett

An outstanding array of speakers from the fields of agriculture, education, business, and industry will be featured at the 1960 convention of the National Plant Food Institute at The Greenbrier, White Sulphur Springs, W. Va., June 12-15, Paul T. Truitt, president of the Institute, has announced.

Richard E. Bennett, president of Farm Fertilizers, Inc., Omaha, Neb., and chairman of NPFI's Board of Directors, will preside at the sessions which begin with a morning program on Monday, June 13.

Afternoon panel discussions June 13 will be on the subjects of the Institute's "Chemical Control Project" and "In-Plant Shrinkage Study," with Dr. Vincent Sauchelli, chemical technologist for the Institute, as moderator.

The morning program for the second day of the convention, June 14 includes showing of the Institute's new film, "Bread from Stone"; presentation of scrolls to winners in "Soil Management Awards for Editors" contest by Mr. Bennett; Drs. George M. Beal and J. M. Bohlen, Department of Rural Sociology, Iowa State University speaking on "Dealer Characteristics Survey"; Murray Renick, Rolla, Mo., Rolla Feed Mills on "What a Dealer Should Know;" Ralph Everett, Miami, Fla., sales training consultant, on "Everything Depends on Sales," and the annual banquet will be held in the evening.

The Nitrogen and Potash Producers will sponsor hospitality hours on Monday and Tuesday afternoons respectively.

Twelve new directors and officers of the Institute will be elected at a meeting of the board of directors Wednesday morning, June 15.

PROGRAM

Fifth Annual Convention

National Plant Food Institute

The Greenbrier, White Sulphur Springs, West Va.

SUNDAY, June 12

9:30 a.m.—Registration.

4:00 p.m.—Ladies' garden party.

5:00 p.m.—Meeting of the Hospitality Committee.

MONDAY, June 13

9:00 a.m.—Registration.

9:30 a.m.—General session, **Paul T. Truitt**, NPFI president, presiding.

Invocation.

Address of Welcome, **Richard E. Bennett**, chairman NPFI board of directors.

"Education, Firm Hope For Agriculture," **Dr. Clifford M. Hardin**, president American Association of Land Grant Colleges and State Universities, and chancellor, University of Nebraska.

"A Future Farmer Looks at His Future in Agriculture," **Jim Thomas**, president, Future Farmers of America.

"The Political Responsibility of the Business Community," **Arthur H. Motley**, president, Chamber of Commerce of the United States.

Memorial Resolution, **Hugo Riemer**, chairman Memorial Committee.

Annual Business Meeting of the Membership, **Mr. Bennett** presiding.

11:00 a.m.—Special Ladies' program: "We Return to Elegance in Home Decoration," **Miss Betty Fisk**, publicity director, Drexel Furniture Co.

2:00 p.m.—Ladies' bridge and canasta party.

2:00 p.m.—Technical session.

Panel discussion, "Report on National Plant Food Institute Chemical Control Project."

Moderator, **Dr. Vincent Sauchelli**, chemical technologist, National Plant Food Institute; "Magruder Check Fertilizer Samples—New Series," **E. M. Glocker**, W. R. Grace & Co., and **Stacy B. Randle**, president, Association of American Fertilizer Control Officials and New Jersey state chemist; "National Plant Food Institute Manual on Standardized Methods of Analysis," **C. H. Russell**, Monsanto Chemical Co. and **J. R. Archer**, International Minerals & Chemical Corp.

Panel discussion, "In-Plant Shrinkage Study."

Moderator, **Dr. Sauchelli**; "Analysis of Causes," **Dale C. Kieffer**, Smith-Douglass Company, Inc.; "Possible Remedies," **Albert Spillman**, Fertilizer Manufacturing Cooperative, Inc.

6:30 p.m.—Hospitality hour, courtesy of Nitrogen Producers.

9:30 p.m.—Open house and country party.

TUESDAY, June 14

9:00 a.m.—Registration.

9:30 a.m.—General session, **Mr. Truitt** presiding.

Film presentation, "Bread from Stone," latest NPFI movie production.

"Are You Taking Full Advantage of Your NPFI Membership?", **Tracy Adcock**, Advisory Committee on Merchandising the NPFI Program.

Presentation, "Soil Management Awards for Editors," **Richard E. Bennett.**

"Dealer Characteristics Survey," **Drs. Joseph Bohlen** and **George Beal**, Department of Agricultural Economics and Rural Sociology, Iowa State University.

"What a Dealer Should Know," **Murray Renick**, Rolla Feed Mills.

"Everything Depends on Sales," **Ralph Everett**, sales training Consultant.

6:00 p.m.—Hospitality hour, courtesy of Potash Producers.

7:30 p.m.—Annual banquet and entertainment.

10:00 p.m.—Open house.

WEDNESDAY, June 15

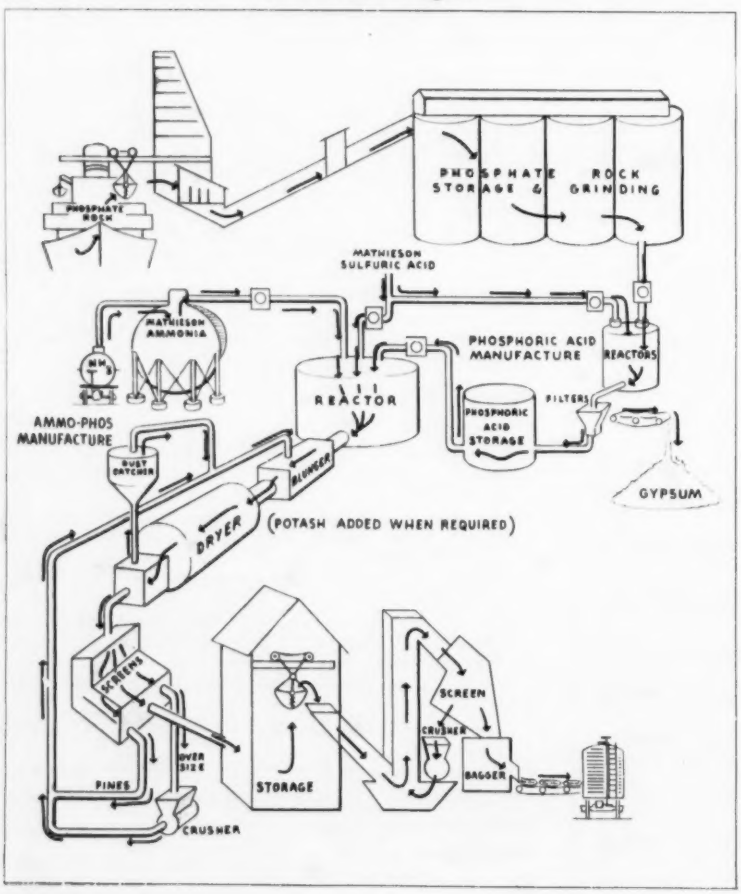
8:30 a.m.—Breakfast Meeting of the new board of directors.

'world's largest high analysis fertilizer plant'

Olin Mathieson Starts up New Pasadena Production

AIR VIEW of Olin Mathieson's Pasadena, Texas plant as seen across Houston Ship Channel. Sulfuric acid plant is at lower left. Silos at center are for phosphate rock storage. Processing is done in the tall section at the left end of the long building; remainder of building is for storage. Shipping is done from three towers and from shed along side of storage building. Mound at upper left is by-product gypsum pit.

Process Flow Diagram



Ceremonies dedicating the new $1½-million dollar production unit at Olin Mathieson Chemical Corporation's Pasadena, Texas complex fertilizer plant were held May 11. S. L. Nevins, Olin Mathieson vice president who heads up the Chemicals Division, officially activated the new production facility.

The additional unit boosts output of the plant 40%, to more than 60 tons an hour, and affords the option of manufacturing diammonium phosphate as well as the monoammonium phosphate which the plant has previously made. New grades added to the high-analysis 'Ammo-Phos' line are 15-15-15, 16-48-0, 14-28-14, 7-28-28, 9-36-18, 13-9-13 and 12-24-24.

The plant, described by Olin Mathieson as "the world's largest high analysis fertilizer plant" since addition of the newly-constructed unit, was built with government financing during World War II by Southern Acid & Sulfur Company, which later became a part of Olin Mathieson Chemical Corporation. The plant began operation in 1945. Mr. Nevins, who was general manager for Southern Acid & Sulfur, started the nation's first commercial production of ammonium phosphate type fertilizer at the plant 14 years ago.

Located on the Houston Ship Channel, a man-made deepwater channel extending 57 miles to the open waters of the Gulf of Mexico, the OM plant is in a favorable position to receive raw materials and to ship finished products. Phosphate rock arrives in ocean-going vessels from Tampa, Florida and is unloaded by bucket crane and belt conveyor into concrete storage silos where it is held for grinding. Most of the sulfuric acid comes from an adjacent Olin Mathieson acid plant which receives molten sulfur by barge from nearby sources. Principal ammonia source is the OM synthetic nitrogen plant at Lake Charles, La., some 150 miles east of the Pasadena site; the ammonia ar-

rives in rail tank cars. Potash is shipped by rail from commercial sources in the U. S.

The Ammo-Phos fertilizers are shipped out by truck, rail, barge and ship, and find their way to nearly all sections of the U. S. as well as to many export markets. About two-thirds of the production leaves the plant in bulk, though much of this is bagged at the company's distribution points to which it is shipped. The plant's strategic location makes possible economical distribution to important midwest regions by Mis-

1. Bucket crane with belt conveyor is shown unloading phosphate rock from ship at extreme left, filling storage silos at right.

2. Rock from storage at left is ground in building at center, re-stored at right for pneumatic transfer to processing unit.

3. Sulfuric acid plant, with molten sulfur barge tied up alongside, is just downstream from main plant; view here is from rock ship dock.

4. Nerve center of the processing plant is control room located beside 'blunger,' a double shaft pugmill mixer used for pelletizing.

5. Slightly-inclined pugmill viewed from discharge end; product is chuted to dryer on level beneath processing section.

6. Tremendous insulated dryer has 150-tons-an-hour capacity.

7. Dried product is elevated to uppermost level, flows through this complex ductwork to battery of screens.

8. Four-screen team viewed from stair landing above.

9. Two crushing mills handle oversize from screens and route them back with fines to recycle.

10. Wet-scrubbing system is designed for phosphoric acid slurry to recover ammonia from process off-gases. Processing units are located immediately behind scrubber system; end of storage building is visible at right.

11. Bagging and sewing units feed packaged product to conveyor system . . .

12. . . . which forms bridge over shed-covered platform to conveyor network alongside rail car positions.

13. Bags continue along fully-mechanized route onto extendable, flexible stacking conveyors used to load cars.

14. Traveling overhead crane inside storage building can feed surge hopper to this conveyor network for bulk loading of barges or ships. This is separate dock located upstream from rock unloading position.

Commercial Fertilizer staff photographs

sissippi, Missouri, Ohio, Tennessee and Illinois river barges, and to both coasts by ship or rail.

Supplying as many major agricultural regions of the U. S. as it does, plus foreign markets, the plant must produce a number of different ratios and analyses, but principal output is confined to about 30 grades.

In the manufacturing process, phosphate rock is ground in one of the roller or ball mills, then it is stored in another set of silos, and finally is conveyed pneumatically to the processing unit where it is reacted with sulfuric acid to form phosphoric acid, with the waste gypsum discharged to a huge reservoir.

Some of the acid is sold, but most goes into the ammonium phosphates.

The wet-process phosphoric acid is further concentrated as necessary, depending on the analysis of the fertilizer product being run at the time, before being reacted with the ammonia. In the initial reaction, a slight acid balance is maintained to avoid ammonia losses, but a second 'neutralizing' reaction is made before the ammonium phosphate solution goes into final processing.

Final processing is accomplished by flowing the slurry into a slightly-inclined double shaft pugmill mixer, where solid materials are added. Pelletizing takes place here, and the multi-layer granules are dried in a 150tph rotary dryer and screened before storage. Oversize pellets are crushed and recycled to the pugmill mixer stage along with the fines.

Since placing the new unit in operation, Plant Manager John Beatty reports they are able to ammoniate and dry diammonium phosphates at a lower temperature than that required for monammonium phosphate grades, as more concentrated acid is used. However, says Sam Cottrell, Plant Food Division director of operations, some diammonium phosphates seem to require more recycle than the monoammoniums.

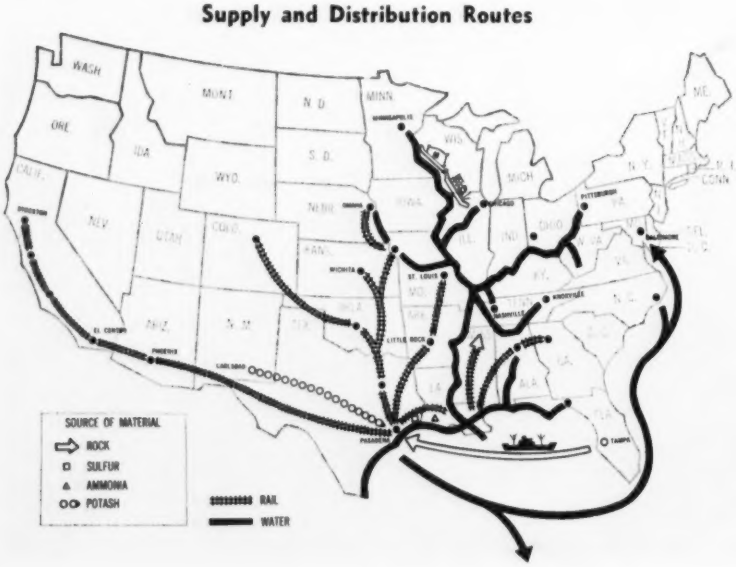
Final product sizes are generally in the minus-6, plus-12 mesh particle range, with most pellets falling in the minus-8, plus-10 classification.

Cyclones are used for dust collection and the cyclone exit stream is fed into a wet-scrubbing system which uses either non-acidic or acidic scrubbing fluids. Scrubbing off-gases with phosphoric acid slurry recovers any free ammonia lost in processing the materials.

After screening, the product is belt-conveyed to huge concrete bins inside a tremendous storage building. It is recovered from the bins by an overhead traveling crane and routed to one of the shipping units. All goods are re-screened prior to shipment, and can be routed to bagging, bulk rail or bulk water shipping sections. Dust is collected at the bagging section with a bag-type collection system using orlon bags. Fertilizers are bagged at time of shipment, as no bagged-goods storage is maintained.

A complex conveyor set-up carries bags from the sewing equipment onto a flexible conveyor extending into the railroad boxcars. Boxcars are lined with corrugated paper before loading. For bulk shipments, double-faced corrugated paper is used, but bagged goods are shipped in cars lined with single-faced corrugated paper, with the corrugated side next to the bags to minimize abrasion from any loose pellets.

Supply and Distribution Routes



World-wide Teaching to Defeat Hunger

Olin Mathieson's vice-president, S. L. Nevins, came home last month from a round-the-world job of setting up "Freedom from Hunger" in 76 nations. The idea is to teach farmers to use fertilizer and other crop chemicals.

The immediate problem, says Mr. Nevins, who represented NPFI on his tour, is to raise $2,500,000 with which to put the program on the road.

Fire Association Article On Ammonium Nitrate

How ammonium nitrate behaves under fire conditions is covered in a new article published by the National Fire Protection Association.

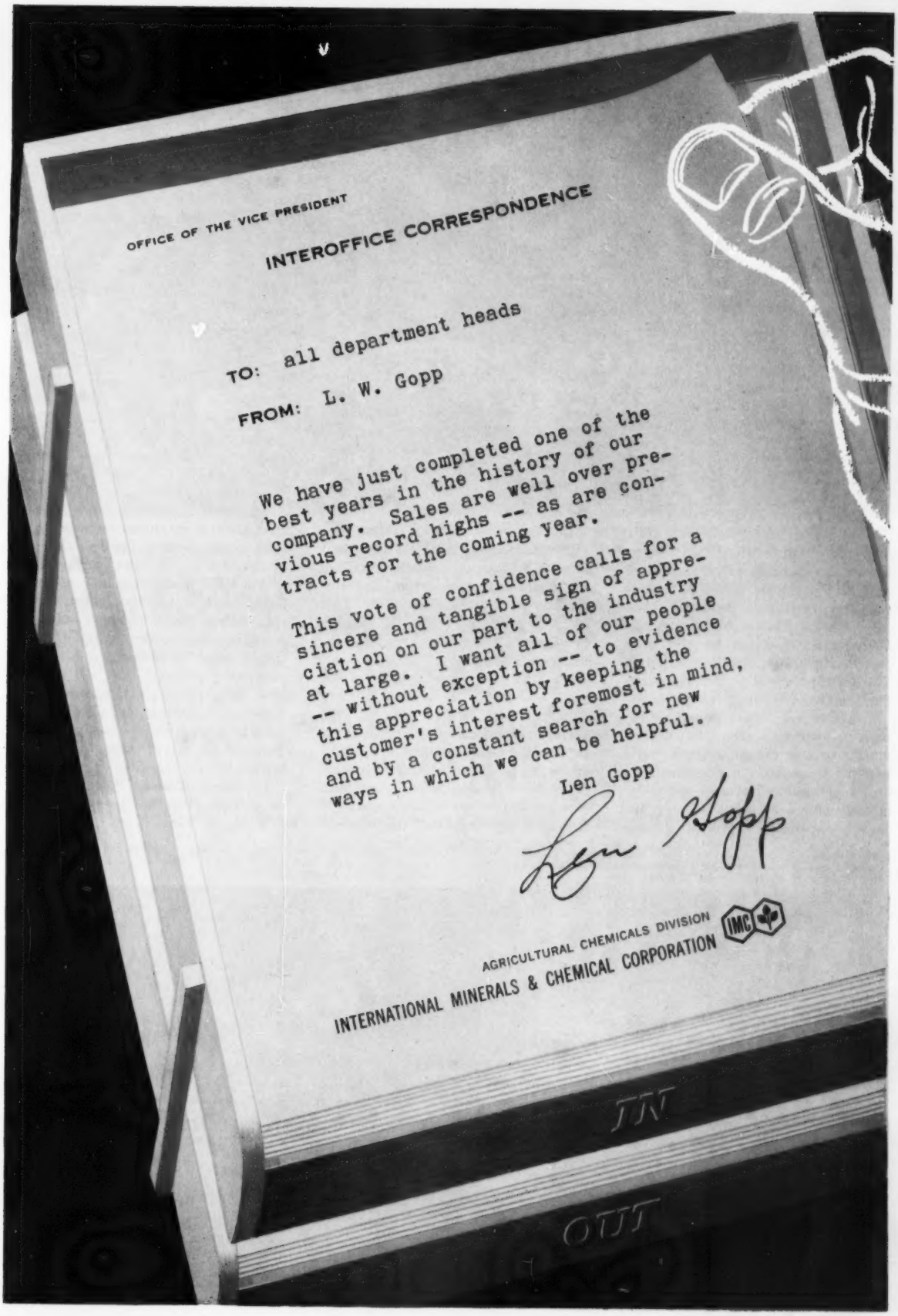
With millions of tons of this chemical being used annually, precautions necessary for safe handling and storage are of concern to warehousemen, transporters and users. Fire and explosion hazards are of special concern to firefighters.

According to Chester I. Babcock, NFPA Fire Record Department manager writing in the association's quarterly magazine, one frequent error is to confuse pure and fertilizer grades of ammonium nitrate with blasting agents, which are a mixture of ammonium nitrate and other materials and are much more explosion-prone.

The article cites tests which indicate that both high pressures and high temperatures are required before ammonium nitrate will explode under fire conditions. Since high pressure conditions are seldom present in transporting or storing the chemical, except in a ship's hole, there has never been a substantiated report of an ammonium nitrate explosion during a fire in a building, truck or railroad boxcar.

Both recommended firefighting procedures and storage methods are detailed in the article.

Reprints of the article, "Ammonium Nitrate—Behavior in Fires," are available at 25 cents each from the National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.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FROM: L. W. Gopp
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Calspray Dedicates Kennewick Nitrate and Complex Plant

Dedication day ceremonies at the new California Spray Chemical Corporation $5,000,000 plant food plant in Kennewick, Washington, May 17 were attended by over 300 invited guests, including state officials and many leading figures in business and agriculture.

A highlight of the day's program was a visit to the dedication ceremonies by 15 governors who were attending the Western Conference of Governors in Washington. Governor Albert D. Rosellini of Washington, formally dedicated the new plant.

Participants in the dedication ceremonies included Howard J. Grady, president of Calspray and Dr. Omer J. Kelley, UDA branch chief.

The plant, already in full production, manufactures ammonium nitrate, ammonium nitrate solutions and high analysis nitric phosphate complex fertilizers formerly supplied to the Pacific Northwest and Inter-mountain areas by the company's Richmond, California plant. The fertilizers will be marketed under the Ortho 'Unipel' label.

Construction was begun more than a year ago after the Kennewick site was chosen from a number of proposed locations, due to easily accessible rail and water facilities, and a location serving the rapidly expanding agricultural areas of Washington, Oregon, Idaho, Montana and Colorado.

Located on a 50-acre site, the plant is on a 24-hour production schedule, employing some 75 workers.

The three major segments of this plant were designed and constructed by The Chemical and Industrial Corp. of Cincinnati, Ohio.

The first unit is a C&I type high pressure nitric acid plant with a daily capacity of 150 tons of nitric acid on a 100% basis, produced at a 57% concentration. This plant is equipped with an electric motor driven centrifugal compressor and expander turbine and is said to be the most modern of its type in the country.

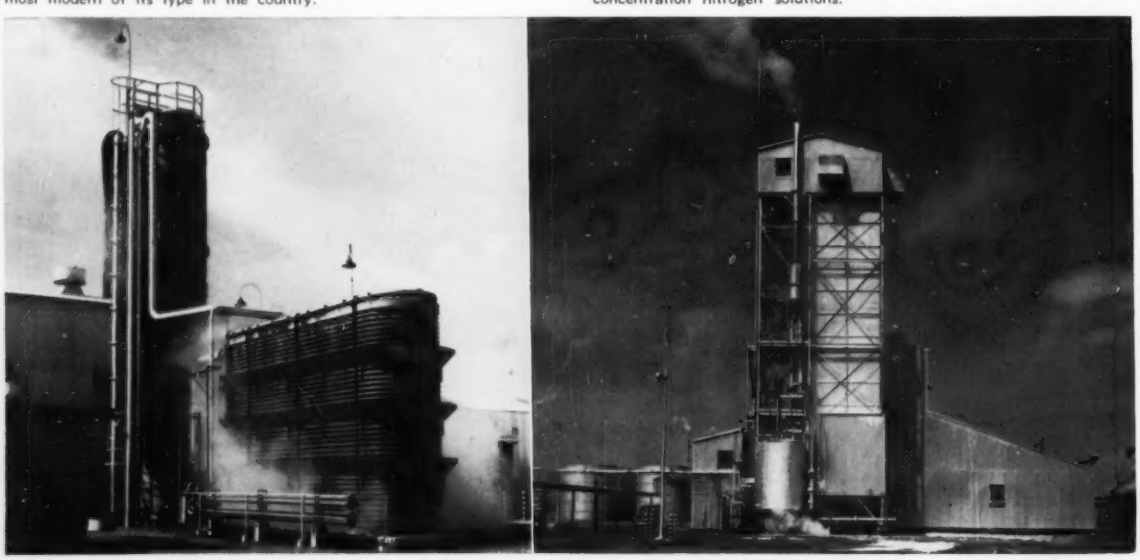
The second segment of this plant is the ammonium nitrate prilling plant and solutions section, and ammonium nitrate solutions plant. This plant is equipped with C&I's new process for producing prilled ammonium nitrate which prills an almost anhydrous ammonium nitrate melt and hence needs only a very small distance of free fall for the pellet to completely solidify. Prills produced by this method are claimed to be superior in their physical characteristics and nitrogen content. The prilling tower is approximately one-third the height of the conventional towers that prill an ammonium nitrate solution at a concentration of 95%-96%. This portion of the facilities has a daily capacity of 150 tons of fertilizer grade prilled ammonium nitrate and simultaneously can make quantities of ammonium nitrate-ammonia solutions and other fortified nitrogen solutions.

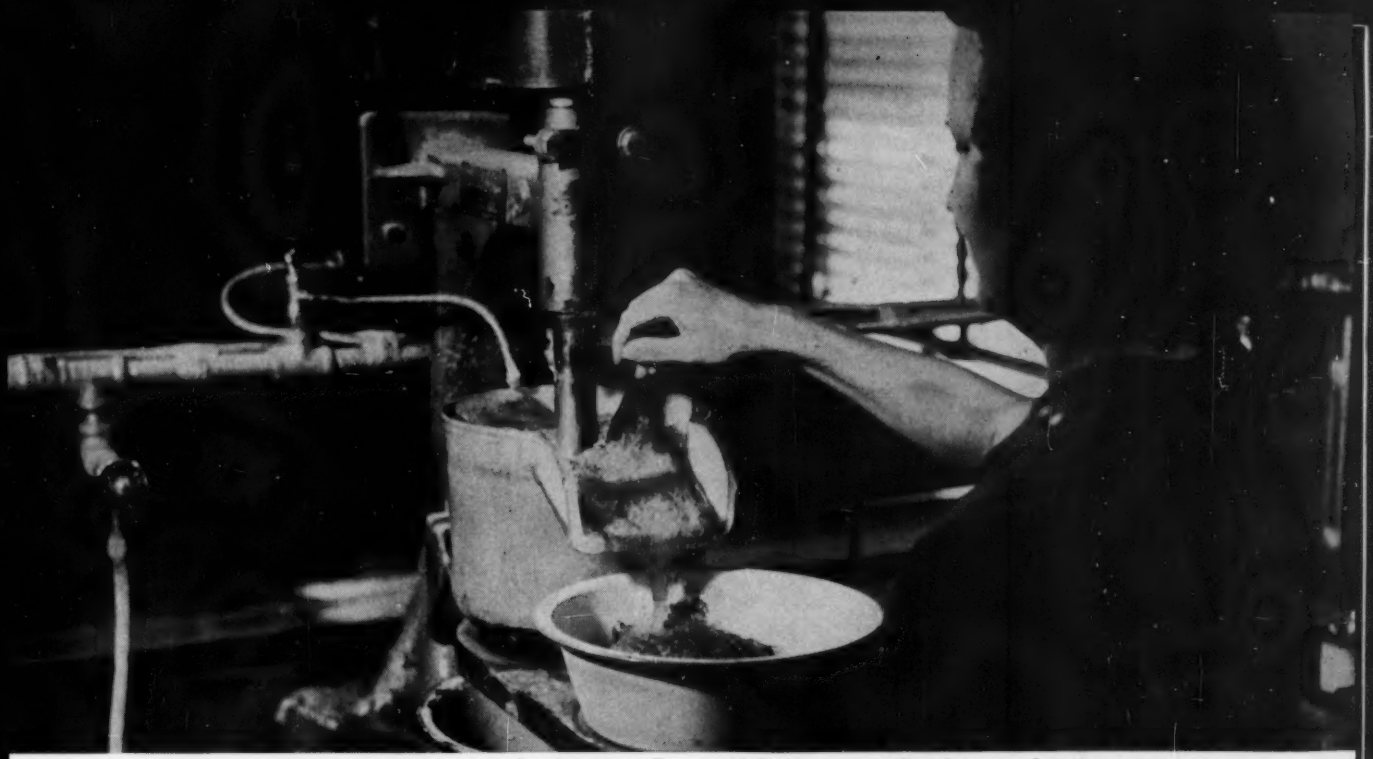
The third segment of these facilities is the complex fertilizer plant. This plant incorporates the PEC acidulating and ammoniating section along with C&I's spherodizer which pelletizes the slurry after it has been mixed in the first section of the plant. The plant can produce any of the grades of fertilizer needed and nitrophosphate plant food that is produced will be tailored to the needs of the crops grown in the Northwest. The combination of the PEC acidulating and ammoniating section together with C&I's spherodizer gives Calspray an outstanding and modern complex fertilizer plant utilizing a continuous chemical process for all units. The spherodizer eliminates much material handling equipment that usually accompanies a conventional granulating plant and materially lowers the recycle rate.

All three of these segments went on stream prior to their scheduled date.

Left: Calspray's 150 tons-per-day nitric acid plant is equipped with electric motor driven centrifugal compressor and expander turbine, the 'most modern of its type in the country.'

Right: Ammonium nitrate plant produces 150 tons daily of prilled ammonium nitrate from a melt (99.5%); this unit also produces high-concentration nitrogen solutions.





An American Cyanamid Company metallurgist runs flotation test on prospector's sample, a key step in evaluating worth of phosphate deposits.

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Sulfuric Acid

Ammonium Phosphate

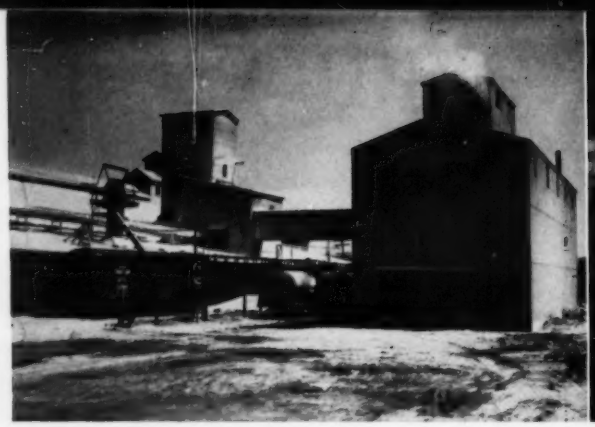
Oxygen

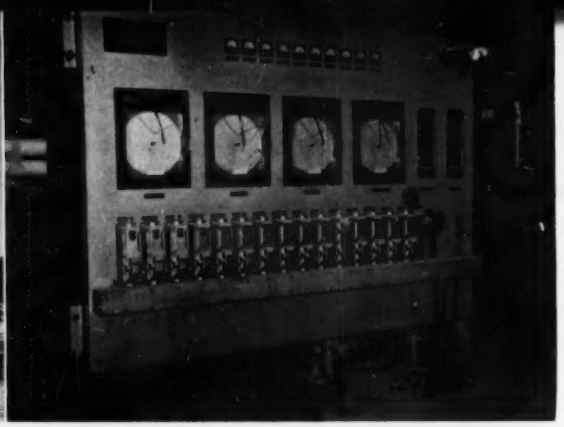
Fume Eliminator

Oil Absorber

Existing plants designed and constructed by C & I are represented here by the flags throughout the world. Due to the Earth's curvature some of the plants cannot be shown.

corporation · cincinnati 26 · ohio





Left: Building at right houses new granulation plant, and is joined to older plant by double-deck conveyor bridge above rail sidings.
Right: Control panel for granulating plant is situated on middle deck of building, near ammoniator exit. Recorders on panel are for: ammonia, nitrogen solution, sulfuric acid and dryer exit temperature. Indicators at extreme right are for fresh water and scrubber water.

Cotton Producers add Granulation

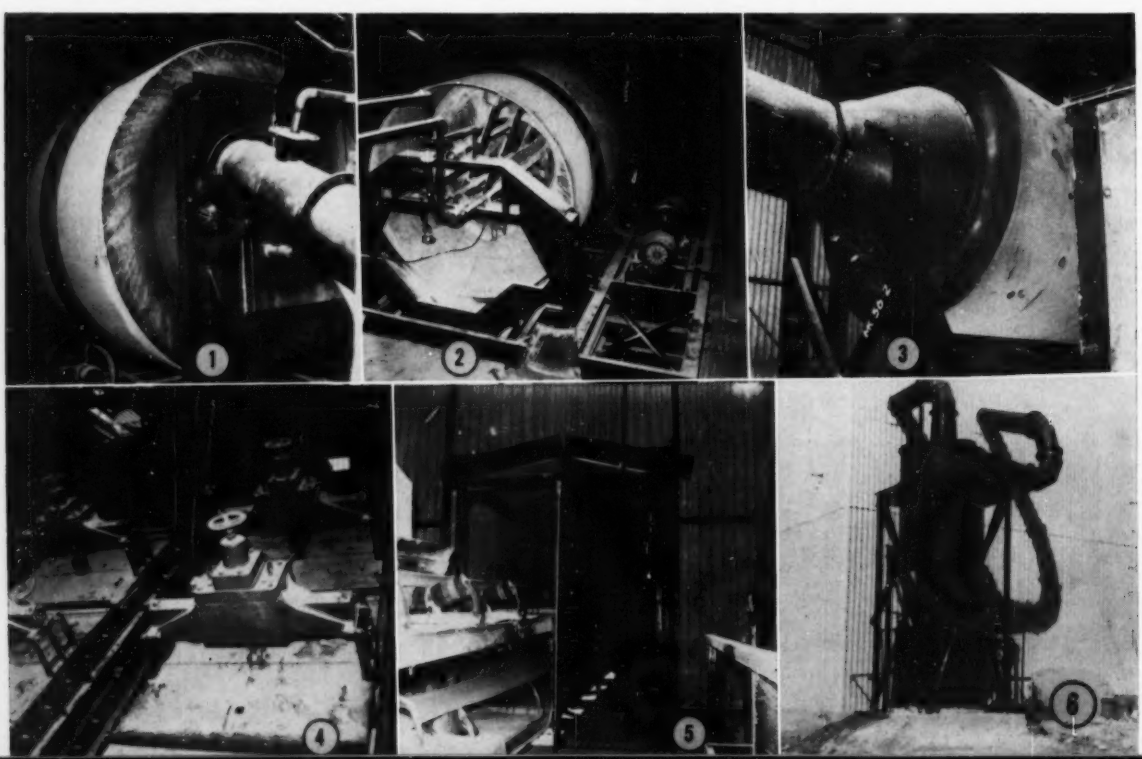
As reported to our readers two months ago, The Cotton Producers Association placed its first granulating unit in operation at Cordele, Georgia this spring. Here is a close-up view of the unit, which is tied in with the already-existing fertilizer plant there.

Solid raw materials are batch-weighed and pre-mixed in the existing batch mixing set-up-then transferred by a belt conveyor system to the new granulating plant. Inside the granulating plant, the mixed solid materials are placed in a surge hopper and fed out by a continuous weigh-feeder into an elevator which chutes them into the TVA-type continuous 7' x 14' ammoniator-granulator.

All the liquid raw materials (anhydrous ammonia, nitrogen solutions and sulfuric acid), plus water, are added to the continuous ammoniator, located on the middle of the three decks in the granulation plant. Granules from the ammoniator are gravity-fed to the lower deck into the rotary dryer, then transferred by bucket elevator to the rotary cooler, located alongside the dryer. Co-current drying is employed with counter-current cooling, and a joint air exhaust to cyclone dust collectors.

A pan-type conveyor runs almost the entire length of the building between the dryer and the cooler, basically carrying the dust from the cyclones back to the granulator feed

1. Feed end of ammoniator, showing dry materials entrance chute at upper right.
2. Ammoniator discharge gives good view of feed pipe installation; chute gravity-feeds product to dryer immediately below.
3. View of feed end of cooler shows elevator housing at extreme right; dried product is elevated and fed by chute at upper left into cooler; duct at left center goes to cyclones.
4. Screens are located on uppermost deck of granulator building; all screened fractions are gravity-fed to destinations: on-size to conveyor belt on middle deck, oversize to crushing mill on second deck, and fines to ammoniator dry materials elevator on ground floor.
5. View from granulating plant through bridge to main building shows catwalk and two belt conveyors, one bringing in pre-mixed solid raw materials, the other carrying out granular product.
6. Scrubber on outside of building recovers ammonia from ammoniator off-gases; wet scrubbing, with sulfuric acid added, returns material to water-feed for ammoniator.



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elevator; but the conveyor is also used for clean-up of the plant, since any spilled materials can readily be shovelled into it and returned to the process.

Exhaust gases from the ammoniator go into an orifice-type scrubber for ammonia recovery. The system uses wet type scrubbing, with addition of sulfuric acid, and the recovered product is recycled to the granulator along with the water added in processing.

Cooled product is elevated to the uppermost deck of the building, where a pair of 4' x 10' Tyler hummer screens size the material. Fines are recycled by gravity, and oversize granules are chuted to a cage mill on the middle deck, cracked and elevated back to the screen feed.

On-size product—95% in the minus 6-plus 16 mesh range—is conveyed by belt back to the main plant for routing to storage.

The granulating plant instrument panel board, from which all operations are controlled, is located on the second deck near the discharge end of the ammoniator. All starting equipment is located on this level, and enclosed in a dust-tight housing.

The building housing the granulating equipment is 96 feet long by 36 feet wide, and maximum height (at the screening tower) is 60 feet to the eaves.

The granulating plant, designed and built by The D. M. Weatherly Company, Atlanta, was placed in operation five weeks after erection was begun. The unit, designed for 40 tons-per-hour operation, can be utilized to produce higher analyses of fertilizer than those currently being manufactured. The bulk of the production thus far has been 4-12-12 and 5-10-15, the two state-recommended grades which account for more than 60% of Georgia's fertilizer consumption.

The Cotton Producers Association, a farmer cooperative organization with headquarters at Atlanta, operates conventional fertilizer plants also at Adel, Athens, Carrollton and Savannah, Georgia, and has just revealed plans for a new all-granular plant near Cullman, Alabama (see page 38).

J. E. Nunnally is director of Plant Food Services for CPA; Quentin S. Lee is director of plant food production and G. A. Burson director of plant food distribution. Harold Green is plant manager at Cordele.

Spencer Completes New Research Facility

Equipment is now being installed in Spencer Chemical Company's new process development building at its research center in suburban Kansas City. Completion of the building marks the final step in consolidation of the company's research facilities in Kansas City and, according to Dr. Nat C. Robertson, Spencer vice president of research and development, "It will enable an effective integration of the laboratory research, which develops new ideas, and the engineering work which perfects these ideas into processes which are commercially practical."

Included in the new building are about 10,000 square feet of work space, plus maintenance and storage facilities and office space which can accommodate 18 persons.

Design features of the new building include a multi-height ceiling with clearances of 15, 30 and 36 feet to allow installation of a wide variety of process equipment. Ventilation system of the building will allow for a complete change of air every three minutes.

Brooks' New Plant In Canada

Brooks Rotameter of Canada Ltd., a new manufacturing plant with sales offices in Scarborough, Ontario, occupies over 6000 square feet of floor space in a modern one story building containing complete calibration and machining facilities.

The new manufacturing and engineering facilities have been established to keep pace with the rapid growth of Canadian Industry.

Brooks' manufactures a complete and integrated line of rotameter instruments for flow measurement and control.

Kansas Farmers Beat the Mud

When wheat farmers around Garden City, Kan. found out that the land was too wet to permit heavy placement equipment, they took to the air. They were pressed for time, they had to fertilize so they could proceed—and the plane placement did the trick.

Under these circumstances they feel now that even 45 to 50 cents more per acre is worth paying to get on with the season.

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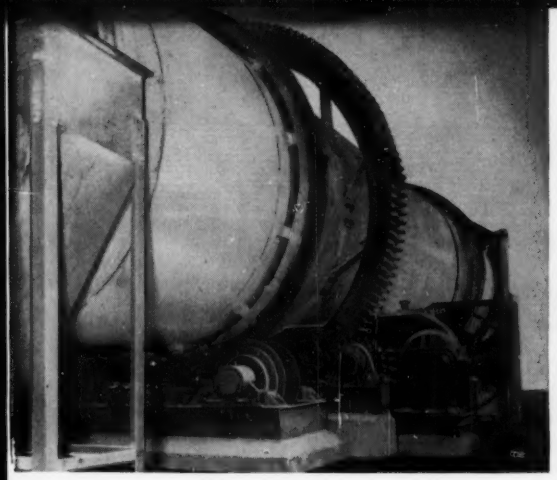

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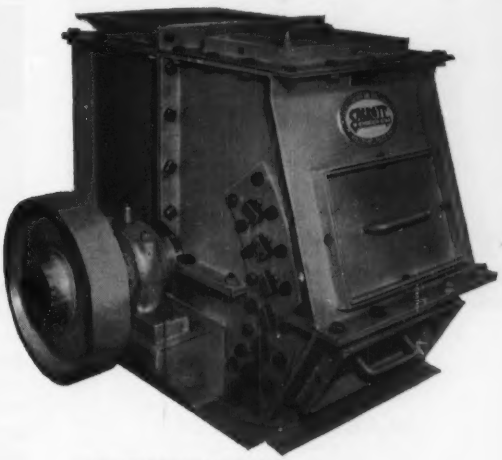

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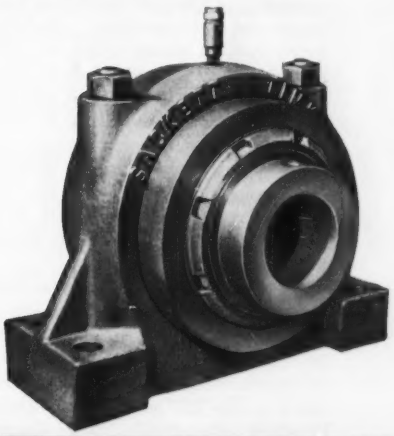

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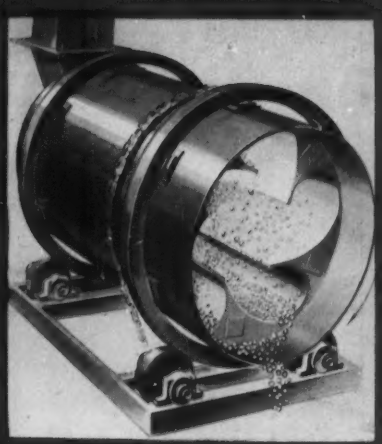
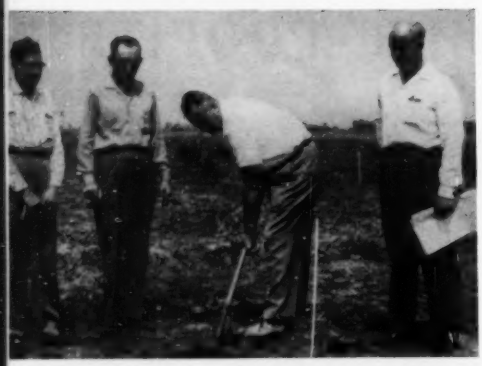
These Sackett Patent Units speed production and lower costs.





C. M. Powell, president of The American Agricultural Chemical Company, breaks ground for the Company's latest expansion project at its Pierce Mines. Present were, left to right, H. R. Quina, maintenance and construction supervisor, F. R. Bergquist, mines manager, President Powell, and J. S. Gruel, mines superintendent.

ALABAMA

The Cotton Producers Association, headquartered at Atlanta, Ga., has called for bids on a 30,000 annual ton granular fertilizer plant to be located on a 255-acre tract they have purchased in northern Alabama. Plans call for construction to begin in July, with the plant in production before the end of the year.

The site is located on U.S. highway 31, twelve miles south of Cullman, where International Minerals & Chemical's Plant Food Division operates a mixing plant which it acquired some years ago from Union Fertilizer Co.

All production at the new Cotton Producers plant will be granular, and storage capacity is planned at 10,000 tons of materials and mixed goods. The plant will be centered in the 225-acre tract, situated between Hanceville and Garden City, to minimize any potential hazard of dust and fume complaints from neighbors.

The proposed facility will represent Cotton Producers' initial erection of a plant outside Georgia (where they operate plants at Adel, Athens, Carrollton, Cordele and Savannah with capacity in excess of 150,000 annual tons), although they have in the past leased production facilities in Alabama.

ARKANSAS

Arkansas-Louisiana Chemical should be in operation by the time you read this with its new $85,000 facility near Magnolia. The company, subsidiary of the Arkansas-Louisiana Gas Co., will extract sulphur in a molten state from natural gas. The result will be sold molten or solid.

CALIFORNIA

Best Fertilizers will proceed with plans to expand its sulphuric acid capacity to 150,000 annual tons, and plans to start soon with its planned granular superphosphate plant with 40,000 annual tons capacity . . . both at the Lathrop location. The sulphuric acid plant is being designed by Bruce L. Wilcox, with the company's assistant chief engineer Chester L. Wittenborn in charge of construction.

* * *

Valley Nitrogen is in production with their new ammonium phosphate and wet process phosphoric acid plant at Helm. This plant uses the plant-run acid Carlile process, and has capacity to produce some 75,000 annual tons of ammonium phosphate; complex fertilizers and 16,500 annual tons of phosphoric acid.

Plant engineering was in the hands of J. C. Carlile Corp., Denver, with a production guarantee, and with a turnkey time limit, and bonded as to capacity, grade and performance.

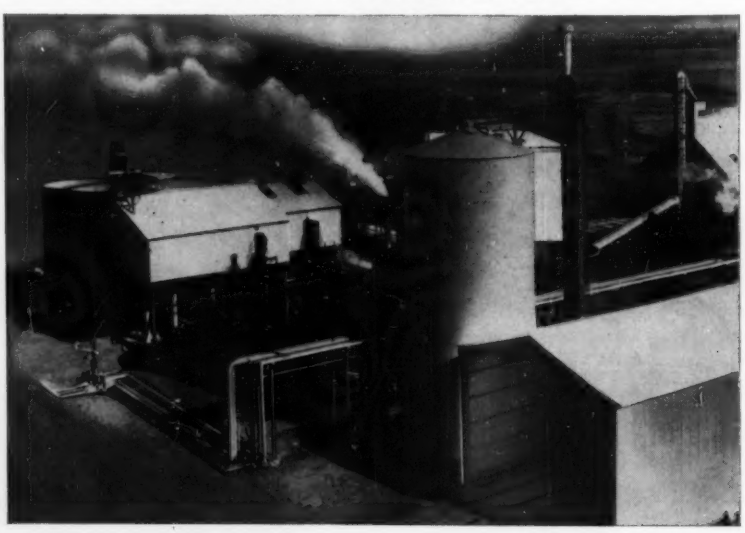
COLORADO

Manco Chemical, Denver, now has a line of 18 garden products, including fertilizers, herbicides and pesticides. President Harold Mankoff says they have added four new lines which he expects will boost their volume 30% this year. These are Rid-All, an insecticide; Kill-Mite, for clover mite and red spider mite; Insect Spray, a bomb for inside the home insecticide work; and a new version of Lawn Life, concentrate lawn fertilizer from which the insecticide has been removed, and potash and phosphates added.

FLORIDA

American Agricultural Chemical is under way with construction of a new phosphate washer at their Palmetto mine, 10 miles east of Pierce. The new Palmetto washer installation, which will include both washing and recovery equipment, is scheduled for completion in March, 1961. It will include recently perfected hydrosizing equipment, to give maximum overall recovery of phosphate. The hydrosizer was de-

NEW VALLEY NITROGEN PLANT AT HELM, CAL.



veloped by R. D. Evans of The A. A. C. Company's metallurgical staff, and is patented by the Company.

• • •

Virginia-Carolina has added a third project to those under way in Florida. A plant which will run to more than $1,000,000, according to Justin Potter, president, will be constructed at Nichols to be in operation by Fall, to produce 100,000 annual tons of di-ammonium phosphate. It will be adjacent to their concentrate superphosphate plant there, and will be completely designed, engineered and constructed by Wellman-Lord Engineering, of Lakeland.

Due for completion this month is the $10,000,000 expansion of the concentrated superphosphate plant, a program which will more than triple capacity. And at Clear Springs V-C is building a $1,000,000 new phosphate rock flotation plant.

• • •

Growers Fertilizer Cooperative, Lake Alfred, suffered a fire, accompanied by three minor explosions, May 6. No damage to the plant was evident, but fertilizers wet by the hoses were damaged to the extent of $2,000, according to plant manager Edward Shores.

IDAHO

Potlach Forests, Inc., Lewiston, is marketing Garden-Lawn Food, heralded as a combination fertilizer, mulch and soil builder. Tree bark natural cellulose is combined with urea, phosphoric acid and additional cellulose under a heat process.

IOWA

California Spray-Chemical Corporation has taken an option on 325 acres of land near Ft. Madison, for the possible erection of a fertilizer plant.

Plans hinge on the outcome of hearings before the Federal Power Commission for allocation of an adequate supply of natural gas for the proposed plant.

The plant, if built, would be intended to service the entire Midwest with a complete line of pelleted and liquid fertilizer. It would produce anhydrous ammonia and make its own nitric acid.

The plant would have complete loading, storage and bagging facilities and would be serviced by truck, rail and barge.

Hormel is producing a new soil enrichment line, produced at Lake Mills. It consists of straight peat, a plant-food enriched peat, and a potting soil. Hormel salesmen calling on the grocery trade are introducing this "team" in Minnesota, Iowa and Nebraska. Institutional lawns, golf courses etc. are also expected to be customers.

KANSAS

Haverkamp Fertilizer Service, Hiawatha, is producing solutions. The firm, which is headed by Norbert Haverkamp will make soil tests and offers custom analysis plant foods to make the soil test results.

KENTUCKY

Tri-State Chemical, Henderson, has been granted participation loans by the Small Business Administration.

MINNESOTA

St. Paul Ammonia, Pine Bend, will spend $4,000,000 for another boost in their nitrogen capacity. Three years ago they built a $15,000,000 plant with a capacity of 70,000 annual tons. Last year this was boosted to 88,000 annual tons. The new construction will give them 110,000 annual tons of capacity.

Board chairman R. Campbell said the plant will also begin producing "two or three of the soil N materials used in fertilizers." Construction is planned to begin in the Fall, for Spring completion.

As our readers know, the output of this plant is marketed through Central Farmers Fertilizer, with 1,500,000 farmer-owner members.

• • •

Wadena Gypsum and Fertilizer Co., Wadena, has been granted a participation loan by the Small Business Administration.

MISSOURI

Armour Agricultural Chemical Company's new liquid and dry fertilizer plant near Centralia is now open. The new plant will serve an area within an approximate 50-mile radius.

Complete liquid fertilizers and bulk dry fertilizer, custom-formulated to farmers' specifications, will be offered, along with popular analyses of Pebble Plant Food in bags and bulk, liquid and solid nitrogen materials and Armour's Vertagreen plant foods.

In addition to the diversified product line, the new plant is equipped to offer custom application of liquid and dry bulk fertilizers and will have available on a rental basis equipment for the application of these materials.

Jack Troyer of Centralia is Armour's sales representative at the new plant.

US Steel personnel of the Columbia-Geneva division, during a tour of the new 140,000 square foot Wagner Bag plant at Salt Lake City, inspect one of their company's fertilizer bags made on the Wagner plant's new multi-wall equipment. Wagner is a St. Regis subsidiary. Shown are G. M. Weight, G. L. Hartvicson, L. G. Bywater and F. B. Johnson all of Columbia-Geneva, and St. Regis packaging engineer, Newell Ward.

• • •

Solar Nitrogen Chemicals are planning to build a $15,000,000 plant near Joplin to produce anhydrous ammonia, urea and related products. The announcement was made jointly by the presidents of Standard

The first major shipment in the US of mixed liquid fertilizer by barge was initiated by Ris-Van, Incorporated of Belmond, Iowa. A new barge of the Commercial Transport Corporation of Texas was loaded at Wilson Dam, Alabama with 1200 tons of 11-33-0 and was moved to Dubuque, Iowa where it was unloaded and stored by the Dubuque Tank Terminal Company for Ris-Van. Picture shows Dr. Strauss making a preliminary test of the liquid fertilizer taken from the barge.

Oil (Ohio) and Atlas Powder Company, whose companies jointly own Solar.

Upon completion, expected for Spring of next year, the output will be marketed by Sohio Chemical, which also handles Solar's similar plant at Lima, O. where a $2,000,000 expansion is now under way.

VIRGINIA

Swift & Co. suffered a fire recently which leveled one building of their South Norfolk operation and did an estimated $100,000 of damage. Two ammonia tank cars on a siding near the burning building were drained to avoid possible explosion.

The building destroyed contained more than 400,000 paper fertilizer bags, in process of printing.

BURMA

Fertilizers and Chemicals Ltd. of Isreal will build near Rangoon a $2,000,000 superphosphate and sulphuric acid plant. The plant to be built over the next two years has the Government's approval. Isreal will produce part of the equipment.

CANADA

Continental Potash is proceeding with its shaft near Unity, but is not expected to reach deposits for some time. Water problems have delayed and stalled shafts of other companies in the Saskatchewan area, but the head of the geology department of the University there predicts a "whole series of mines in 10 to 20 years" because "Saskatchewan has the largest known deposits of high grade potash in the world."

EL SALVADOR

Fertilizantes de Centro America, S. A., proposed $10,000,000 "common market" fertilizer plant, which was reported going to Costa Rica, will instead be located at Acajutla, according to latest report. Standard Oil of New Jersey subsidiary, International Petroleum will furnish 50,000 annual tons of ammonia.

ENGLAND

Imperial Chemical Industries, at their Severnside Works, are planning a new ammonia plant with related plants for urea and fertilizers, which is expected to cost $28,000,000 and be completed by 1963.

This is the second stage of development at these Works, which is expected to run to a quarter of a billion dollars or more before completion of present plans.

The Severnside project should turn out 100,0000 annual tons of ammonia. ICI is also already expanding the methanol plant at its recently completed Heysham Works, which will bring up to 75,000 annual tons.

* * *

Hargreaves has completed an arrangement with Agriform (California, USA) to supply technical knowledge and aid in the development of the Hargreaves subsidiary, Liquid Fertilizers.

HUNGARY

The Tiszapalkonya nitrogenous fertilizer plant will be expanded by 100,000 annual metric tons as part of the Hungarian program to double its chemical output in its second five-year plan. In addition, the Kazincbaricka plant will be doubled in size; a 300,000 annual metric ton superphosphate plant will be a division of the Tiszapalkonya operation, plus two additional sulphuric acid facilities, rated at 100,000 annual metric tons.

INDIA

The National Industrial Development Corporation has set up a sulphur and sulphuric acid subsidiary in the Amjor area of Bihar State. Pyrites will be the main raw material. A Norwegian expert has been engaged to study the pyrites deposits there. The project is estimated at $12,600,000 to $14,000,000 and should produce 200 to 300 daily tons of sulphur. India at present imports more than 120,000 annual tons of sulphur.

IRELAND

W. & H. M. Goulding Ltd. are developing an additional 200 daily tons sulphuric acid unit, to be built in the Dublin area. Simon-Carves Ltd. who have the contract for the plant also engineered the Cork project for Goulding, which is now nearing completion.

KOREA

Lee Byong Chull is seeking American partners in a urea plant of 170,000 annual tons capacity. You can reach this Korean industrialist through his embassy or our own Department of Commerce field offices.

LORRAINE

Houilleres du Bassin de Lorraine which is building at Carling a unit producting 70% nitric acid has contracted with Societe Belge de l'Azote of Liege. This is the second plant erected by SBA for Houilleres, and their sixteenth nitric acid plant construction contract.

MOROCCO

Shell Petroleum will build at the Port of Safi an $18,000,000 ammonium phosphate plant, in which the Moroccan Government will hold a minor share.

* * *

Sutrima Company, formed by a group of Europeans who buy phosphate from Morocco, are planning at Safi a 200,000 annual tons triple superphosphate plant. Plans are afoot also to use locally mined phosphate and local natural gas to produce phosphoric acid, which the Government expects to be able to sell at prices lower than those of European producers.

PORTUGAL

Uniao Fabril do Azoto has signed an agreement with Italy's Montecatini for a urea plant at Labradio with capacity of 40,000 annual metric tons. This will be the 34th major industrial unit using the Fauser-Montecatini process for urea manufacture.

The plant is being engineered by M. W. Kellog Co. and will incorporate total recycle in the liquid phase, and the alternative of partial recycling of ammonia.

Credits 25% of Food to Fertilizer

Dr. George E. Smith of University of Missouri's soils department says we'd all be pretty hungry if our plant food was taken from our land.

What's worse, "American workers would have to toil two to three times as long to earn a loaf of bread, a pound of butter, or a pound of meat," he says.

25% of the nation's food production can be attributed to the use of fertilizer, Dr. Smith figures.

We'll Need 25% More

Total crop output would have to rise 25% by 1975 to feed 230,000,000 Americans expected to be needing feeding by then.

Which to Fertilize?

THE SOIL or THE CROP

by VINCENT SAUCHELLI
CHEMICAL TECHNOLOGIST
NATIONAL PLANT FOOD INSTITUTE

"Feed the soil."

"Feed the crop, of course."

A good case can be made out for either recommendation. Fertilize generously, I say, so as to feed both the soil and the crop. This subject has been kicked about for many years. Perhaps it is not possible to give a straightforward, simple answer.

Those who advocate feeding the soil tell us that a sound program for profits is to build up a high level of fertility, especially of the minerals, phosphate and potash, ahead of planting. Such a built-in fertility will provide at all times a level of readily available plant food to ensure maximum yields. Nitrogen, in this program, is applied in supplementary doses for the sake of efficiency, since nitrogen losses in the form of nitrate may possibly occur. Also in this program is included application of substantial amounts of limestone at regular intervals of time to supply nutrient calcium and to reduce soil acidity. If the feed-the-soil-program is followed, the row placement of fertilizer becomes less important.

Those who recommend feeding the crop believe it is more profitable to place the fertilizer where it can be most readily utilized by the plant. They emphasize that, in many soils, phosphate and potash may be 'fixed" by soil agencies and consequently put out of circulation. Small dosages placed along the row, they say, will return the most for each dollar invested in fertilizer. They seem to forget that the objective should be to achieve the most profit per acre.

The great majority of farmers are not using enough fertilizer, any way you judge their programs, so that perhaps the discussion is more or less only of academic interest. Maybe not.

You will perhaps agree that a brief review of some of the better established facts of fertilizer behavior and of how crops feed may give this discussion needed substance. Let us consider what fertilizer is, how it should be used and for what purpose.

First, we should have a definite understanding of the two concepts which are in conflict. Soil is a complex, dynamic biological equilibrium. The products of this dynamic interrelationship of earth, chemicals, organic materials and billions of microorganisms furnish the true food for plants. In other words, the soil is to be regarded as a living unit which through its alchemy generates the food that plants can utilize. Fertilizer then, according to this concept, is not a specific food for plants; it is raw material that is converted to plant food through the chemical and biological agencies of the soil.

Opposed is the concept which considers soil merely as a physical support for plants and convenient trough for holding soluble materials used as food by the plant. The fertilizer, therefore, is there in solution to feed the plant directly as its specific needs may require. In other words, the fertilizer is plant food, ready to be used.

Soil scientists and plant physiologists in general point out that fertilizers in the soil become components of the colloidal complex comprising clay and humus and are acted upon by biological agencies. Plants get their nourishment as a product of this intricate, dynamic system. This intricate interrelationship defies simple description.

Two fundamental characteristics of the soil must be appreciated if this discussion is to mean anything. First, the soil is biologically alive. Take away the living, microbial fraction and it is merely dead, inert rock particles. Secondly, its colloidal properties determine the nature and release of food to the plant. Thus, soil fertility and its relation to crop feeding is governed by the state of its living, microbial population and by the electrical properties of its non-living, colloidal complex. These two mutually dependent characteristics of a soil will at all times definitely influence the behavior of applied chemical fertilizers. Soil fertility becomes the resultant of these several interactions. Soil fertility is something more than just the mixture of fine rock particles and chemicals in solution; it is the result of the vital nature of the soil. Conditions that favor the microscopic organisms in the soil, will also ensure healthy plant growth. For the supply of nitrogen, phosphorus, sulfur and the other plant food elements depends entirely on the metabolism of this teeming microscopic life in the upper few inches of the soil.

That the total amount of living organisms in a soil is substantial can be appreciated by considering their gross weight: conservative estimates of the total weight of this invisible population vary from 1000 to 5000 pounds per acre plow slice of soil. It has to be fed and the supply must be maintained for high fertility purposes through large amounts of fertilizer.

The most important **inorganic** constituent of a soil pertinent to this discussion is **clay.** Every good, fertile soil must have a reasonable fraction of clay. Its importance to fertility is due to the negative electrical charge carried by the surface of its crystals. This attracts positively charged ions which are held until removed by organisms or other more strongly charged cations. Calcium, magnesium, potassium, iron, zinc, cooper, manganese and cobalt—all cations—are held on the clay and humus surfaces by electrical attraction or by what soil scientists refer to as "base exchange capacity" and the cations as "replaceable bases." The size of this base exchange capacity determines how much of each of the nutrient cations may be retained in the available state by the soil against losses through leaching and other means. The limit of soil fertility with respect to the cations is defined by the magnitude of its base exchange capacity.

These positively charged ions on the clay surfaces are also subject to the pull of electrical forces on the plant roots: they travel to whatever force is the greater. Apparently, the

plant seems to win. Soil physicists have their explanations for this apparent victory, but we shall have to skip the details.

From this viewpoint of feeding the soil it is stated that it is not possible to feed the plant without first feeding the life of the soil. Nature seems to say that permanent fertility is accomplished by first satisfying the biological and colloidal requirements of the soil and then maintaining that state. This viewpoint also emphasizes the fact that the so-called "fixation" of phosphate should be considered a boon to mankind since its adsorption by the electrical forces of the soil's colloidal complex is a means of preserving it against loss while keeping it available as a plant nutrient.

Well, what is the conclusion of these observations? As Montaigne used to say: "Que sais je?" Who knows?

Whether to feed the soil or feed the crop, it may be wise to make the best of the findings of the soil test and apply fertilizer generously to satisfy both the soil organisms and the crop. In this manner the highest returns per acre may be realized.

IM&C Men Find, Solve Transport Problems

Traffic experts of International Minerals & Chemical Corporation, visiting 239 fertilizer companies recently in a new phase of IMC's customer service program, have already come up with effective solutions to 59 specific problems.

With transportation pegged at about one-third the total cost in the plant food industry, IMC had undertaken the service to show the individual fertilizer manufacturer what he can do about his transportation costs and services.

ITEM: A customer in the South receiving sulfate of ammonia paid the maximum rate because the shipper could load only 86,000 pounds in railroad cars rated at 140,000 pound capacity, due to the density of the product.

ITEM: A customer in the East was considering construction of a fertilizer plant some distance from its main location, but became discouraged because it had been quoted a rate of $8.10 a ton, plus $5 local charge, on phosphate from Bartow, Florida.

ITEM: A Midwest company, receiving phosphate rock, is located between two railroad division points

—one 30 miles south; the other 60 miles north. Shipments were set out north bound at the nearest division point on a two-day interval which made scheduling difficult. South bound the schedule was on the intermediate days. Result: The railroad agreed to set out the phosphate at different division points on alternate days, so that day-to-day delivery is now in effect.

ITEM: A plant location study for a corn belt customer. For each element in two specific plant food formulas, IMC computed the pounds to be used, the freight rate by either rail, truck, barge-rail, or barge-truck, and developed a cost per net ton of product, both from his present plant and from a proposed new site.

ITEM: A company in the southeast which ships a commodity by rail into a Georgia location heard that shippers using another railroad received rates as much as 50 per cent below its own rate. Several conferences arranged by IMC developed the information that the lower rate is in return for agreement to ship a certain percentage of the finished product back out via the same railroad. Result: The railroad serving the first company is looking favorably at the possibility of offering similar rates.

ITEM: A Canadian company has been charged a certain rate on phosphate products from Florida for a number of years. The IMC man on the transportation mission considered the rate to be in error, because the plant is intermediate to a principal point. Conferences with top railroad officials verified this belief, and as a result the customer has received retroactive refunds totaling more than $1200.

Literally hundreds of rates were checked in the many other cases handled by IMC. The company regards the transportation mission, which was part of its "Full Orbit" customer service program, as the most comprehensive attempt ever made to bring the most effective transportation possible to the plant food industry.

British Find Polymeric Coating for Fertilizer

In British patent specification No. 815,829, T. K. Hanson suggests that a tendency to cake may be eliminated by coating fertilizer with polystyrene or polyvinylchloride.

The water-soluble components are said to be released more slowly into the soil.

PEOPLE in the

Adams

Farrell

Gates

Smith

Virginia-Carolina

The board of directors of Virginia-Carolina Chemical have elected Edward R. Adams, Andrew A. Farrell and A. P. Gates as vice presidents.

At the same time R. Daniel Smith, Jr., company attorney, was named general counsel.

Mr. Adams, formerly controller, was elected vice president—finance; Mr. Farrell, general manager, mining division, was named vice president in charge of mining; and Mr. Gates, general sales manager of the fertilizer division, was elected vice president in charge of fertilizer sales.

This action, taken at the Board's regular meeting in Richmond, gives V-C a total of five vice presidents in addition to executive vice president, Charles T. Harding. The others are Dr. William P. Boyer, chemicals division and Douglas W. Laird, purchasing.

The Board announced "with regret" that it had become necessary for Charles E. Heinrichs, formerly vice president in charge of mining, to relinquish his duties as vice president because of ill health. Mr. Heinrichs will continue to serve the corporation as a consultant and as a member of the board of directors.

Armour

L. W. Jones has been promoted to sales aide in the Davenport division of Armour Agricultural Chemical Company, and will assist in the supervision of Armour's fertilizer sales activities there, it has been announced by G. W. Gosdin, Davenport division manager. Mr. Jones joined Armour in 1949.

Beacher

Chandler

NPFI

Dr. Robert L. Beacher, well-known soil scientist, has been named Southern regional director for the National Plant Food Institute, with headquarters at Atlanta, Ga.

Formerly Southwestern Regional Director for the Institute, Dr. Beacher's region has been expanded to cover 12 states as follows: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. He succeeds Dr. Samuel L. Tisdale, now with the Sulphur Institute.

E. K. Chandler, formerly NPFI district representative at Knoxville, Tenn., has been assigned responsibility for the four Southwestern States of Arkansas, Louisiana, Oklahoma, and Texas, with headquarters in Shreveport, La. The announcement was made by Dr. Beacher.

St. Regis

Directors of St. Regis Paper Company elected Philip B. Duffy and John A. McDermott, vice presidents of the company. Mr. Duffy, who is executive vice president of St. Regis Container Division, was named vice president-corrugated containers. Mr. McDermott, general manager of all pulp and paper manufacturing, has been named vice president in charge of pulp and paper manufacturing.

St. Regis announces the appointment of C. C. Smith as district sales manager of the Cleveland sales area of its bag division, which includes Northern Ohio and Western Pennsylvania.

Fred LeFaivre is sales representative in the Cleveland area of the bag division and reports to Mr. Smith.

Woodville Lime

Election of George C. Urschel, Jr., to president and chief executive officer of The Woodville Lime Products Company has been announced. He succeeds his father, George C., Sr., who becomes chairman of the board. George, Jr. started with the company as a laborer in 1945.

Urschel, Jr.

Re-elected officers of Woodville Lime are Joseph J. Urschel, vice-president—sales, and J. Robert Cowell, secretary-treasurer.

Founded in 1902, the company's 52 kiln plant and 90 acre quarry are located in nearby Woodville, Ohio. Known reserves have been established at 200 years.

For its farm customers, the company maintains a custom-mix fertilizer plant in Woodville.

Monsanto

Monsanto's inorganic chemicals division has announced a newly created post—director of sales, and appointed Dr. Louis Fernandez. He will be responsible for the division's technical sales and service, sales administration, advertising, sales promotion, market research, personnel recruiting and training.

As director of nitrogen products Stanley B. Johnson replaces Dr. Fernandez; Robert T. Webber becomes assistant director of engineering; John B. Trotter becomes director of sales of special products.

General Chemical

The appointment of John L. Damon, previously agricultural chemical sales manager, to the position of director of agricultural chemicals of Allied Chemical's General Chemical Division has been announced by Frank J. French, president.

Mr. Damon, with the division 24 years, will assume direction of all activities related to the division's agricultural chemical products, including sales, purchasing, manufacturing and research.

INDUSTRY

Swift

H. P. Gould, manager of Swift & Company's phosphate center, Bartow, Florida, announces the appointment of R. E. Kelly as head of the center's customer service department, succeeding Vernon Shirley, who passed away suddenly in March.

Kelly

Mr. Kelly has had varied experience in Swift's Agricultural Chemical operations, serving in manufacturing and sales capacities in Bartow, Chicago and Atlanta. According to Mr. Gould, Mr. Kelly's personality and varied experience will enable him to continue the prompt, courteous service to Swift's phosphate products customers.

Kraft Bag

Following the announcement of the completion and full operation of a new 300,000 sq. ft. multiwall bag manufacturing plant, at St. Marys, Georgia, Edward Burgers, Jr., sales manager for the Kraft Bag Corporation (Gilman Paper Company subsidiary), announces the following sales staff appointments and changes:

P. F. Finley, promoted to Southeastern sales manager, with headquarters in Raleigh, N. C., responsible for all sales in Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama and Eastern Tennessee.

F. C. Joos, Jr., who has been covering Southern Illinois, Missouri, Arkansas and Eastern Oklahoma, working out of St. Louis, has been assigned the additional territory of Western Kentucky and Tennessee.

P. E. Bray, who previously covered the entire state of Georgia, will now cover Southern Georgia and Florida, and will work out of Jacksonville.

A. E. Rood, Jr., has been appointed to cover Northern Georgia, Alabama and Eastern Tennessee. He will make his headquarters in Atlanta.

R. A. Port has been appointed to cover Mississippi, Louisiana and Texas, working out of new Orleans.

R. E. Burke, has been appointed to cover the states of Virginia, Maryland and Delaware. His headquarters will be in Baltimore.

IMC

International Minerals & Chemical Corporation has announced appointments, three in the development department of the research, engineering and development division.

Dahlberg

Upham

Lewis Barry was named manager of the Florida Experiment Station, Mulberry. Robert Shetler, senior process engineer at Bonnie, Florida, was promoted to senior development engineer. Donald Smalter, formerly chief engineer of chemical and quality control for the phosphate department in Florida, was promoted to staff manager of development planning in Skokie.

Mervyn A. Upham has been named operations manager for IMC's potash mine in Canada, where they are sinking a 3,100-foot shaft near Esterhazy, Saskatchewan, into what the company describes as the largest known deposit of high-grade potash in the world.

Merrill M. Parsons has joined them as agricultural market analyst.

Dr. Jack F. B. Silman of Toronto, Canada, has joined the mining and exploration department as an exploration geologist.

Henry W. Dahlberg Jr., Wilmette, has been promoted by IM&C, Skokie, to administrative manager for the agricultural chemicals division —sales. He heads a new administrative department which will handle many of the financial and administrative functions previously handled by the division's four sales departments.

Dorr-Oliver

Henry W. Hitzrot who has been handling certain administrative matters in the international operations area of the company, has been appointed to the project department of Dorr-Oliver Incorporated, Stamford, Connecticut. He has been with the company since 1927, when he joined the predecessor company—The Dorr Company-Engineers — as a metallurgical engineer.

In the project department, Mr. Hitzrot will be concerned with development and sales of complete phosphate rock, phosphoric acid and fertilizer processing units, engineered, designed, equipped and/or constructed by Dorr-Oliver. He will continue to make his headquarters at the D-O main office in Stamford.

AP&C

American Potash & Chemical Corporation has transferred Robert E. Zator from its Whittier, Calif. laboratory to the firm's Los Angeles Office it was announced by J. L. Bills, manager of market research.

Mr. Zator, a former research chemist, joins the company's market research group as an analyst.

Grace Chemical

F. Wayne Weaver has joined the sales staff of the Memphis district of W. R. Grace & Co., Grace Chemical Division, it was announced by J. W. Floyd, district sales manager. Mr. Weaver will cover the trade in Arkansas, Louisiana and Oklahoma. Mr. Weaver formerly sold fertilizer materials for Phillips Petroleum Co. Prior to that he was plant manager and salesman for Tennessee Liquified Gas Co.

Weaver

U S Borax

Appointment of Arthur R. Ramirez as special assistant to George L. Oppel, director of production for United States Borax & Chemical Corporation, is announced by R. T. Edgar, vice president in charge of production. His initial duties will be in the area of maintenance programming.

Appointment of Warren S. Wolf to the marketing department is announced by M. H. Pickard, director of market development and technical services.

Cyanamid

Clifford D. Siverd has been named general manager of American Cyanamid Company's Agricultural division effective June 1, President Wilbur G. Malcolm announced May 25.

Mr. Siverd succeeds Frank S. Washburn, son of the founder of Cyanamid. Mr. Washburn will retire in September. Until that time he will serve as special assistant to Kenneth H. Klipstein, executive vice president, to help effect the changeover of management in the Agricultural division.

Mr. Siverd has been assistant general manager of the division since March, 1958.

B. F. Bowman, currently marketing director of the division, moves up to assistant general manager.

Mr. Siverd joined American Cyanamid as a salesman in 1946. In 1949, he became assistant to the general manager of the Pigments division.

In 1956, he was named assistant general manager of the Fine Chemicals division and in 1957 was appointed assistant general manager of the Farm and Home division. When the Phosphates and Nitrogen division was merged with the Farm and Home division in 1958 to form the Agricultural division, Mr. Siverd became assistant general manager of the new division.

Mr. Bowman joined Cyanamid as general sales manager of the Fine Chemicals division in 1954. He became marketing director of the Agricultural division in 1958.

Mr. Washburn joined the company in 1918 as a field representative selling cyanamide and phosphate rock. He became a regional sales manager of the Fertilizer division in 1924 and in 1939 was appointed director of fertilizer sales.

When the Fertilizer division was merged with the Insecticide division in 1947 to form the Agricultural Chemicals division, Mr. Washburn was named director. This division later became the Phosphates and Nitrogen division. When it was merged with the Farm and Home division in 1958 to form the Agricultural division, Mr. Washburn was named general manager.

* * *

F. A. O'Neall has been named assistant chief engineer for the American Cyanamid phosphate operations at Lakeland. Charles L. Eisenhart will succeed him as triple super manager, according to manager Arthur Crago.

International Paper

F. Henry Savage, vice president—marketing, International Paper Company, was elected to the board of directors at the annual meeting to fill the vacancy created by the withdrawal of R. A. L. Ellis.

The board also elected Wallace K. Graves, George H. Rand and John L. Tower as vice presidents.

Edward Z. King, Jr., who has been an assistant treasurer, was appointed by the board to the new corporate office of Comptroller and John S. Maxwell became an assistant treasurer.

The appointment of R. R. Worthington as assistant general manager, Bagpak division, International Paper Company was announced by A. A. Scholl, division general manager. Succeeding Mr. Worthington as sales manager will be R. A. Gair, Jr.

C. H. Crain has been named to replace Mr. Gair as West Coast regional district sales manager. C. F. Evans of the Atlanta sales office, will assume Mr. Crain's former sales duties in the Chicago sales office.

Appointment of Donald B. Pooley as West Coast manager for International Paper's corrugated shipping container and multiwall bag sales was announced by W. S. Snyder, IP's vice president, converted products.

Mr. Pooley, with International since 1950, previously had served as manager of West Coast container sales. He will continue to make his headquarters in San Jose, California.

In his new position, Mr. Pooley will supervise sales activities of IP's Bagpak division, as well as the container division, which produces corrugated shipping containers of all types.

Calspray

The recent appointment of Dr. Charles T. Lichy as field agronomist in the Fresno area of California Spray-Chemical Corporation's western operations was announced by George Wood, Calspray district manager. Dr. Lichy was formerly a research chemist for several nation-wide firms based in St. Louis.

MFA

Stanley Perham has been named manager of the MFA bulk plant in Vandalia, Mo. He has been with the Missouri Farmers Association at Union.

Raymond Bag

Mr. Myron S. Kem has recently been appointed to the position of treasurer of Raymond Bag Corporation, Middletown, Ohio.

Mr. Kem comes to Raymond Bag from The Dayton Rubber Company, Dayton, Ohio, where he held the position of comptroller and assistant secretary.

Richardson

The appointment of Joe R. Vogel as Philadelphia district manager, was announced by officials of Richardson Scale Co. Mr. Vogel three years ago opened a Richardson district sales office at Boylston Center, Mass., to serve the New England area.

Address of the Philadelphia office is: 11 Park Rd., Havertown, Pa. Telephone: Hilltop 6-1308.

Canada

C. H. Jefferson has been made chief of the Feed, Fertilizer and Pesticide section, plant production division, Canadian department of agriculture, succeeding C. R. Phillips, who has become director of the division.

Florida

Succeeding the late Nathan Mayo, Lee Thompson has been named commissioner of agriculture for Florida. He is a veteran career man, with 30 years service in the department of agriculture.

Louisiana

Millard S. Perkins, assistant agriculture commissioner, has completed 65 years as an employee of the Louisiana State department of agriculture. He has worked under nine commissioners and is the oldest State employee, having started at the age of 16.

Pan Am Sulphur

Martin E. Sandlin has succeeded retiring J. R. Parten as chairman of Pan American Sulphur Co., Houston, Texas. He will continue to serve as general counsel.

Stoker

Robert Schmitt has been named Eastern district manager for H. L. Stoker Company of Claremont, California, manufacturers of Stoker Bag Packers and Stoker Settlers. With headquarters in Wayne, New Jersey, Mr. Schmitt will be responsible for sales and service for the eight offices comprising the Stoker Eastern district. Before joining Stoker, Mr. Schmitt was with Richardson Scale Company.

NEW!

WEST VIRGINIA'S 1960 STANDARD BAG CONSTRUCTIONS TO SAVE YOU MONEY

Major savings for fertilizer packers are being achieved by three new standard WONDERWALL bag constructions perfected by West Virginia.

During a controlled test to determine possible savings in bag costs, various WONDERWALL constructions were developed in our Multiwall Packaging Laboratory. They were tested by 101 packers who shipped 569,224 tons of fertilizer in 12,307,546 WONDERWALLS.

The three recommended standard constructions and their actual savings, as used in normal conditions, are shown in the box.

For example, where a typical 100# old fashioned kraft bag usually would require 1/90 AL, 2/40, 1/50 for a total of *four* plies, the new standard WONDERWALL provides the same or superior strength with *three* plies: 1/100 AL, 1/40, 1/50 . . . at a saving of $3.50 per M.

Secret of WONDERWALL's strength is Kraftsman Clupak*, the paper with the built-in stretch that withstands far more impact without breaking than conventional natural kraft multiwalls. In a WONDERWALL bag, fewer plies are needed to do the job!

See how WONDERWALL standard bag constructions can *cut your costs, increase your profits.* Our technical service experts are ready to help you take full advantage of these new bag developments; call or write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Ave., New York 17, N.Y.

Clupak, Inc.'s trademark for extensible paper manufactured under its authority.

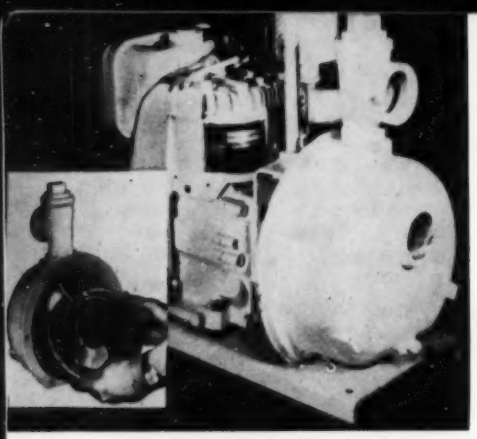
NEW STANDARD WONDERWALL FERTILIZER BAG CONSTRUCTIONS

Pounds Packed	Old Style Natural Kraft Construction	New Wonderwall	Actual User Savings
100#	1/90AL, 2/40, 1/50	1/100AL, 1/40, 1/50	$3.50/M
80#	1/90AL, 2/40, 1/50	1/100AL, 1/40, 1/50	$3.10/M
50#	1/90AL, 1/40, 1/50	1/100AL, 1/60	$3.80/M

Smith-Douglass Co., Inc., Norfolk, Va., has shipped over 50,000 tons of fertilizer and related products in a million new WONDERWALL 100# standard construction bags. They report excellent results with a saving of $3.50 per M and reduced bag breakage.

West Virginia Pulp and Paper

FREE LITERATURE ON EQUIPMENT MATERIALS AND SUPPLIES



Liquid Fertilizer Pumps

Crown Manufacturing Company's new pumps are designed with replaceable volute and impeller, which assures maximum utility and extremely low maintenance costs. Another feature which is receiving interest in the liquid fertilizer field is Crown's use of stainless steel bolts and cap screws on all pumps to eliminate the corrosion problems. Also, to give extra long wear on moving parts, Crown makes available its volutes and impellers in highly resistant 'Ni-Resist Iron.'

For extra utility Crown pumps are designed to be powered by standard crankshaft engines. Crown models include self-priming centrifugals, straight centrifugals and electric powered pumps.

For complete information, circle number 1 on CF's Information Service card, page 51.

Silicone-Fiberglas Dust Bags

High temperatures and corrosive atmospheres no longer limit the use of fabric filters in dust collecting applications, as bag-type dust collectors made from fiberglas treated with silicones will operate continuously at temperatures up to 600 F., according to Dow Corning Corp.

Manufacturers of these gas-stream cleaning devices indicate that the heat-stable silicone treatment provides new operational freedom by protecting woven glass fiber filters from the deteriorating effects of highly acid or alkaline gases, dust deposits, moisture and mechanical action. Silicone treatment has increased the life of glass-cloth filter bags exposed to such service conditions by as much as 25 times, from an average of six weeks to as long as three years' reliable operation.

Silicone treatment also makes it easier to clean filter bags,—a maintenance advantage. The durable lubricating characteristics typical of silicone finishes reduce filament breakage and abrasive wear of glass fabric. Efficiency of mechanical shaking and reverse air flow cleaning methods are increased while damage to glass fibers is reduced to a minimum.

For further information on silicone-treated fiberglas bag filters, circle number 2 on CF's Information Service card, page 51.

Complex Fertilizer Process

'Complex Fertilizer' is the title of a new brochure describing The Chemical and Industrial Corporation's continuous chemical process for producing high analysis fertilizers from basic raw materials.

The attractive three-color fold-out bulletin gives a description of the process and optional variations, and features a large schematic flow diagram showing the nature and positioning of equipment used.

For a copy of 'Complex Fertilizer,' circle number 3 on CF's Information Service card, page 51.

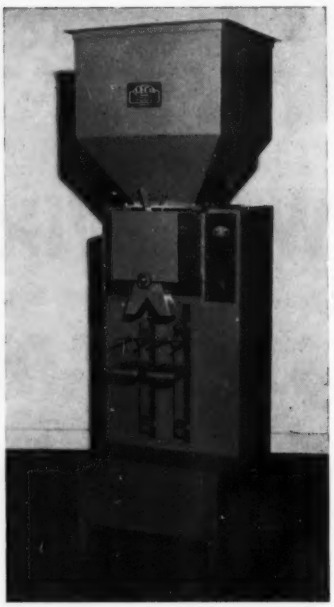
Conveyor-Scale Systems

A new four-page bulletin on the use of conveyor-scale systems for flow-rate control and total thru-put measurement of bulk materials has been published by Weighing & Control Components, Inc.

The new bulletin deals with the use of conveyor-scale systems in conjunction with flat-bed or trough-type conveyor-line systems, fixed or variable speed, to provide in-motion weight measurement. System operation is explained and illustrated with pictorial diagrams. Application and performance data is given on all of the unitized system components.

A section of the bulletin describes the application of W-C conveyor-scale systems to a variety of control functions in procession and formulating operations, including ingredient proportioning. This section also covers the use of the system's continuous thru-put data, expressed in weight per unit of time, for inventory control and cost accounting purposes.

Bulletin 60, Unitized Conveyor-Scale Systems, is available by circling number 4 on CF's Information Service card, page 51.



Bag and Carton Filler

'Pack-O-Matic' is the name of a new filling machine for small bags, cartons and cans up to 10 pounds. The unit, developed by Lowndes Engineering Company, is available in standard or stainless steel models and occupies only 24x32 inches floor space, standing 84 inches high.

Adjustable filling speed allows a maximum filling speed of ½ to ¾ ounce per second on standard machine, depending on density of material being packaged. Material flow is continuous, alternating between twin filling spouts; as set weight is reached, flow is automatically diverted to other spout. Two accurate balance scales, one for each spout, are adjustable down to fraction of an ounce.

Bag platforms are adjustable from 4 to 20 inches height, and bag guides can be adjusted vertically or removed.

For four-page folder and prices on Pack-O-Matic, circle number 5 on CF's Information Service card, page 51.

Remote-Reading Flow Meters

Remote-reading, electrical flow meters for all types of liquids and gases at line pressures to 5000 psi are described in a new bulletin issued by Republic Flow Meters Company, subsidiary of Rockwell Manufacturing Company.

Republic's complete line of electrical remote-reading flow meters for steam, water, oil, and special liquids are illustrated. Principles and engineering features are described . . . including typical electrical circuits, flow charts, piping and boiler arrangements and piping requirements for orifices, flow nozzles and venturi tubes.

Publication No. 59-5 is available free for circling number 6 on CF's Information Service card, page 51.

Eccentric Valve Bulletin

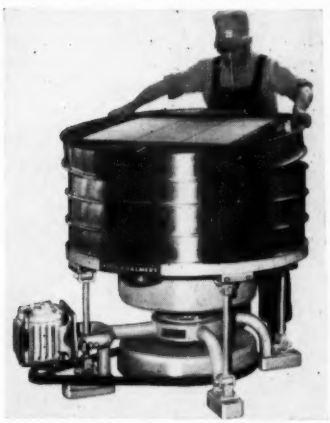
A new 8-page, 2-color bulletin is now available describing DeZurik Eccentric Valves. The bulletin lists features of the valve as well as materials, pressure ratings, dimensions, and accessories, and outlines the broad areas where the valve is extensively used. For a free copy of Bulletin 110, circle number 7 on CF's Information Service card, page 51.

Gyratory Screen

Operating advantages of Allis-Chalmers redesigned stainless steel gyratory screen Model SS-2 are told in a new bulletin released by the company.

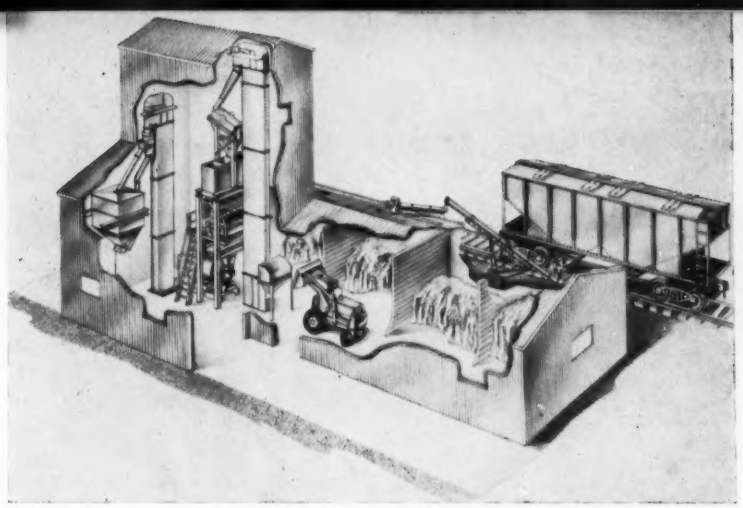
Features which make the screen easy to install, dismantle, clean and inspect are spelled out in the bulletin, which includes a table of dimensions and one of comparative openings of screen cloth.

Designed for accurate sizing of dry corrosive and/or abrasive materials, the screen provides up to 35 sq. ft. of screening area in 16 sq. ft.



of floor space with 3 to 7 decks available for separating into 2, 3 or 4 products at feed sizes of from 200 mesh to ¼ inch.

Copies of "Allis-Chalmers Gyratory Screen," 06B8446A, are available by circling number 8 on CF's Information Service card, page 51.



New Low-Cost Bulk Plants

A series of economical package plants for blending and mixing bulk fertilizer has been introduced by Midstate Machinery Company.

Designed for low-cost installation in any simple steel or frame building, these pre-engineered plants are furnished complete with equipment, detailed assembly plans, and a choice of floor-plans to fit your building and operating requirements. Construction can be handled by the purchaser on a do-it-yourself basis or turned over to Midstate for a complete turnkey job.

The smallest plant is designed for one man operation and utilizes a minimum of equipment to produce 15 tons of mixed and blended fertilizer every hour. A larger version boosts capacity to 30 tons per hour with the addition of a second employee and slightly more equipment.

These new fertilizer plants may be financed with one of several purchase plans. A lease plan is also offered for those who do not wish to tie up their capital. Under this plan, all lease payments are fully tax deductible.

A complete brochure illustrating these new package plants and the equipment they contain may be secured by circling number 9 on CF's Information Service card, page 51.

Tank-Trailer Catalog

Tank operators are presented with a comprehensive picture of the entire Fruehauf line of liquid and dry bulk units, described and illustrated in the new 24 page 'Fruehauf Tank-Trailer' catalog. This catalog gives design features, specifications and options of the aluminum, steel and stainless steel trailers.

Among the units covered for petroleum haulers, are Fruehauf's steel and aluminum transporters in single and multiple compartments with capacities from 6,200 to 10,000 gallons. The aluminum trailers in this field are also reported ideal for handling chemicals and fertilizers.

For a copy of this catalog circle number 10 on CF's Information Service card, page 51.

Bin Level Control Units

Standard Products Division of Stephens - Adamson Manufacturing Company is offering a new bulletin describing their 'Tellevel' bin level control units. The units consist of a sturdy dust-tight casing which houses a sensitive control switch.

The Tellevel unit can be wired to open a circuit and shut off material feed when pressure of a rising level of material tilts the float-ball aside.

The unit is available in three models. The standard duty model is for light to medium weight granular materials. There is also an explosion-proof model and a heavy-duty Tellevel.

For a copy of Bulletin 159, circle number 11 on CF's Information Service card, page 51.

Gyro Sifters

Young Machinery Co., which has acquired the plant and facilities of Robinson Manufacturing Co., announces publication of a new bulletin covering the complete line of Robinson Gyro Sifters.

Units are furnished with single or multiple sieves to make two, three or four separations. The improved double balanced drive eliminates vibration.

For Bulletin G-260, circle number 12 on CF's Information Service card, page 51.

Drag-Type Conveyor

J. B. Ehrsam & Sons Manufacturing Company's new Bulletin E3500 describes their 'Dracon' drag-type conveyor.

Covered in detail are the tail, trough and head sections, chain, flights, feeder section and discharge gates. An engineering section in the brochure gives details for calculating horsepower requirements.

The unit is stated to be self-cleaning and to move more material per horsepower than most conventional conveyors.

For copy of Bulletin E3500, circle number 13 on CF's Information Service card, page 51.

Electric Fork Truck

Dimensional and engineering specifications and operational advantages of a 2500 lb. capacity, battery powered fork truck are presented in a six-page color brochure published by Industrial Truck Division, Clark Equipment Company.

The 'Clarklift' EC-25 is available with fork heights up to 130 inches for high tiering. All features of the truck are discussed, with special emphasis on the accessible contactor panel, carbon pile resistor for smooth acceleration, dual field drive motor, nested roller upright and self-adjusting brakes.

For a copy of Bulletin SS-2215, circle number 14 on CF's Information Service card, page 51.

Ammonium Nitrate Plant

A new booklet from The Chemical and Industrial Corporation outlines their process for production of prilled ammonium nitrate and nitrogen solutions. A large schematic layout shows equipment used and flow sequence of materials.

A brief process description states that the prilling of an almost anhydrous ammonium nitrate results in superior dense pellets, and also describes production of highly concentrated nitrogen solutions in the plant. An area 100 feet square is all the space required for a 200 ton-per-day plant, the brochure adds.

For a free copy of C&I's new ammonium nitrate prilling and solutions process folder, circle number 15 on CF's Information Service card, page 51.

Bulk Material Hauler

An expansion to its line has been announced by Highway Equipment Company with the addition of the Model 'C' Bulk Material Hauler. The Model 'C' can be used for transporting and unloading virtually all materials of fine granular consistency.

Four different body lengths are available . . . 8-foot, 11-foot, 13-foot and 15-foot . . . with capacities from 50 to 80 barrels. A 30-inch heavy-duty, 4-ply rubber belt-over-chain conveyor assures a smooth flow of

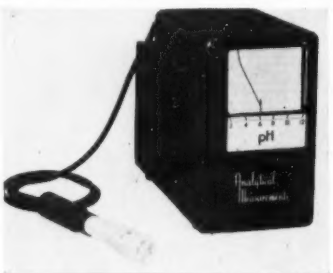
material to the discharge hopper. The screw-jack allows precision setting of the feedgate. Generally speaking, loads can be discharged within 6 to 12 minutes depending on the material and size of load. It is available as a power take-off or engine driven unit.

Additional information and the name of the nearest distributor can be obtained by circling number 16 on CF's Information Service Bureau card, page 51.

Recording pH Meter

A combined pH meter and strip chart recorder is now available at a price lower than most conventional pH meters alone.

This instrument utilizes an electronically modulated amplifier that compensates for line voltage fluctuations and uses standard radio tubes. A strip chart recorder forms the front panel of the instrument and contains a 63 ft. roll of chart paper that will last for 31 days at 1 inch per hour. Other chart speeds are



available up to 16 inches per hour by a simple gear change. A pressure sensitive coating is used on the chart paper so that ink and clogged pen problems are eliminated. Connections for insertion of a platinum resistance thermometer provide automatic temperature compensation.

A switch on the front panel permits disconnection of the chart drive so that the instrument becomes an indicating pH meter. The Analytical pH probe unit provides a unitary glass electrode system completely protected by polyethylene which makes possible pH monitoring that heretofore has been impractical because of complicated installation or excessive instrument costs.

Printed circuitry techniques and simplified recorder design permit the Analytical Recording pH Meter with pH Probe Unit to sell for only $195.00 f.o.b. factory.

For illustrated brochure No. 3-R, circle number 17 on CF's Information Service card, page 51.

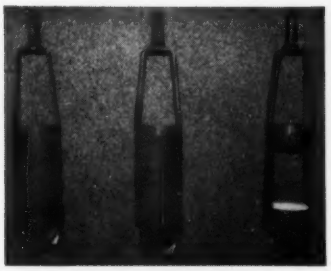
Positive Discharge Elevators

Two new series of positive discharge bucket elevators have been announced by Bucket Elevator Company. Both types of elevators feature positive gravity discharge, accomplished by mounting the buckets between two elevator chains and passing them over large head sprockets; the buckets are then inverted directly over the discharge spout by snubber sprockets providing positive discharge of material. Low bucket speeds make these elevators ideally suited for handling abrasives and materials of large or irregular particle size.

The "Vap" series of elevators features cantilever design with full access to the interior for easy cleaning. Removable covers the entire length of the elevator are held in place by quick-opening clamps.

The "GP" series provides an elevator for general purpose applications.

For further information, circle number 18 on CF's Information service card, page 51.



Soil Sampling Auger

A complete line of soil samplers is being offered by Art's Machine Shop, exclusive manufacturer of the 'Perrin Model' soil sampling auger. The standard Perrin Model auger, used for general soil sampling in ordinary type soils, features an exclusive bit design for easy penetration.

A special mud type auger is designed for easy extraction of mud or clay samples, and another special auger for use in extreme types of sandy soil is built to retain a sample of dry sand.

All heads are on a non-extendable one-piece 'T' handle. Extendable augers are also available up to 30 feet, and can be easily handled by one person.

For complete price list and descriptive literature, circle number 19 on CF's Information Service card, page 51.

Tractor Shovel Bulletin

A new four-color bulletin describing the power, speed and handling characteristics of six 'Michigan' line tractor shovels has been published by the Construction Machinery Division of Clark Equipment Company.

The new publication is broken down into convenient reference sections. These include one devoted to general specifications for each tractor shovel model, and others on the power train, the hydraulic system, the 'bonus bucket' and overall engineering features.

A variety of job applications are featured, illustrating digging, carrying and dumping capabilities of the various tractor shovel models equipped with buckets ranging in size from 1 to 2¾ yards capacity.

For CMD Bulletin 3000, circle number 20 on CF's Information Service card, page 51.

High-Capacity Sifters

A new compilation of technical data, published by Entoleter, Inc., describes Cirlyptic sifting equipment for high through-put screening and size classification of chemicals, and other products.

Included in the data sheet are operating principles, dimensional data, typical sifting capacities for different screen sizes, and recommended uses of the Cirlyptic sifters.

The Cirlyptic sifter is a high-capacity horizontal screening apparatus that operates without use of agitating materials (such as rubber balls) or external vibrators. The sifter features sanitary stainless steel construction, ease of installation, low space requirements, and operates with minimum screen stacking or blinding.

For further information, circle number 21 on CF's Inormation Service card, page 51.

Sectionalized Fertilizer Plants

A new brochure, illustrated with photographs of existing plants, describes the Carlile processes for production of wet process phosphoric acid and ammonium phosphate fertilizers, including di-ammonium. Plant construction utilizes sectionalized design which provides simplicity and economy.

Schematic flow diagrams show the step-by-step production of phosphoric acid and ammonium phosphate fertilizers, including complex fertilizers. Plants described in the text range in capacities from 30 tons per day of P_2O_5 to 200 tons per day, and from five tons per hour of high analysis ammonium phosphate to 25 tons per hour.

Data included will act as a guide for new installations as well as increasing capacities of existing installations by sectionalizing, and feature plants built on a guaranteed capacity basis. Copies of the brochure are available by circling number 22 on CF's Information Service card, page 51.

Tractor Drum-Rack

A new, 2-barrel over-wheel drum rack for tractor spraying is announced by Engine Parts Manufacturing Co.

Suitable for rear axle mounting on any farm tractor, it is known as Yellow Devil Model 3878-D. Installed in conjunction with either a rear or front-located sprayer, the rack provides space for dual 55-gallon drums, or 110 gallons extra spray, twice standard sprayer capacity. The manufacturer advises that extensive field tests prove it saves both time and labor incident to drum refills.

Among rack features is high clearance which prevents damage to growing crops. The rack does not interfere with the tractor hydraulic system.

Shipping weight of Model 3878-D, including 2 half racks (one for over each wheel), is 132 lbs. For Enparco Bulletin SP-6003, circle number 23 on CF's Information Service card, page 51.

Stainless Steel Chopping De-lumper

Franklin P. Miller & Son, Inc., manufacturers of the Supreme line of crushers, choppers and de-lumpers, announces development of a new stainless steel, heavy duty Chopping De-Lumper No. 1075B.

The 1075B chops and de-lumps with minimum fines, low rpm, low temperature rises: urea, ammonium nitrate, sulphur, phosphates, potash, aldrin, DDT, and any hard, soft, wax-like and even semi-tacky materials.

The chopping and de-lumping mechanism consists of a slowly revolving toothed single roll on which a large number of replaceable, non-swinging teeth are fastened. Many types and sizes of teeth are available including pick, hatchet, hammer, and anti-clog types. Teeth pass through a stationary sizing comb furnished in many styles to suit the material.

Reduction and de-lumping takes place as one after another of the pick-like teeth come in contact with the material. This occurs rapidly in succession in a staggered manner to rock the chunks and prevent jamming. Tooth angle is such that chunks of any size up to full hopper dimension are chopped. Feed is automatic as teeth grab chunks of all sizes and force them against the size limiting comb for final reduction.

Final reduction and sizing takes place as teeth trap over-sized pieces against the rugged comb. Desired size particles are pulled through the comb and discharged downward by centrifugal force; the single toothed roll does the entire action, resulting in a chopping de-lumper which is simple, positive acting and durable.

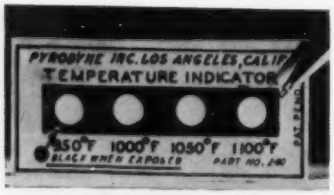
Takes up to 16" feed in 16" x 16" opening. Product choice: ¼" to 4". Weight of machine 1200 lbs. 5 to 10 h.p. motor. Larger units available in either stainless steel or carbon steel.

For further information, circle number 24 on CF's Information Service card, page 51.

Temperature Indicating Labels

A simple method for temperature detection and indication through 1100°F is now available in the form of Temp-Plates, adhesive-backed temperature indicating labels, manufactured by Pyrodyne, Inc.

The increments, calibrated to an accuracy of plus or minus 1%, change from pastel to jet-black to give a positive, irreversible record of heat exposure. From 500°F to 1100°F in fifty degree steps, the in-



dicators are ceramically isolated on stainless steel foil plates; from 100°F, the plates are offered in plastic casing. Highly flexible and immune to most ambient conditions, Temp-Plates will adhere until intentionally removed.

Designed for detection of hazardous excess temperatures, Temp-Plates provide a safeguard for equipment and personnel by pointing up over-heat conditions on critical areas.

Literature available by circling number 25 on CF's Information Service card, page 51.

30-Inch Vibrating Mill

A 30-inch vibrating mill suitable for continuous processing of a wide range of materials—including dolomite, limestone, and phosphate ore and concentrates—is a new unit in Allis-Chalmers line supplementing the 15-inch mill introduced in 1958.

Powered by two 50-hp motors, the compact mill can outproduce a tumbling mill 15 to 30 times per unit volume. Initial cost of the vibrating mill is said to be at least one-third lower than that of any other machine of comparable capacity.

The mill is basically a spring-mounted cylinder with dual eccentric drive mechanisms running horizontally on each side. The entire unit with motors and integral base frame occupies only 66 square feet. It has an internal volume of 12 cubic ft.

A description of the mill's remarkable grinding action for a wide range of materials is given in new leaflet 07B9582, available by circling number 26 on CF's Information Service card, page 51.

Suspension Hopper Scales

Cardinal Scale Manufacturing Co. has announced publication of Bulletin #102 describing their line of Cardinal Suspension Hopper Scales, used for batching, charging, proportioning, filling, compounding and processing in all types of industry.

The Cardinal Suspension Hopper Scale Lever Systems are of all-steel welded fabrication, and can be manufactured to the customer's specifications to be used with an existing or proposed cylindrical, rectangular, or square hopper.

The hopper scale can be equipped with single or multiple batching beam units, and with 'over and under' indicators. Basically any type of automation that the customer desires from a simple mercury cut-off to a complex remote installation can be supplied.

The Cardinal Suspension Hopper Lever System can also be equipped with dials, dials and printers, strip or chart recorders, and can be automated to the customer's requirements.

Bulletin 102 may be obtained by circling number 27 on CF's Information Service card, page 51.

Catalytic Exhaust Purifiers

Exhaust purifiers for oxidizing carbon monoxide, fumes and odors from gasoline, LP-gas and diesel-powered equipment are illustrated and described in a four-page folder just published by Oxy-Catalyst, Inc.

Entitled 'For Cleaner Safer Air,' the literature gives the technical characteristics and typical elimination data for three types of catalytic purifiers: for engines fueled with LP gas or unleaded gas, for 4-cycle diesel engines, and for engines operating on leaded gasoline.

The catalytic purifiers, constructed of sturdy pressed steel parts, pipe, castings, and fittings, come complete with installation instructions and service notes. The literature states that the OCM Catalytic Exhaust Purifier eliminates 95 percent or more of carbon monoxide and over 80 percent of the other objectionable exhaust elements.

Copies of 'For Cleaner Safer Air' are available free on request by circling number 28 on CF's Information Service card, page 51.

Familiar face in Midwest fertilizer plants: U.S.I.'s Field Service Engineer Tom Martin checks granulation of product at Federal Fertilizer Co. plant in Danville, Ill.

Here's U.S.I.'s Tom Martin . . .

LOOKING FOR WORK IN YOUR PLANT

Tom Martin is U.S.I.'s Senior Field Service Engineer covering fertilizer manufacturers in the Midwest. His job: To help customers make the most efficient use of U.S.I.'s Ammonia, Nitrogen Solutions, Sulfuric Acid and Phosphatic Fertilizer Solutions (wet process phosphoric acid).

Tom knows materials, processes, equipment, formulations, costs. He'd like to put his knowledge and experience to work in your plant.

Why not get in touch with him? He's available for trouble shooting on any immediate production problem you may have. Tom will also help you calculate optimum formulations . . . suggest equipment . . . determine whether — and how — you can cut costs. He'll work with you setting up trial runs, and lend a hand until production is running smoothly.

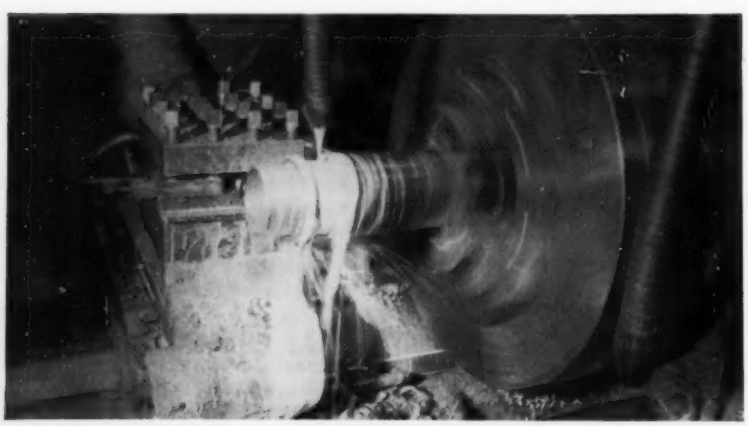
If this U.S.I. service would be valuable in your operations, you can contact Tom Martin through our New York Sales Office. Write or phone collect. The number is OXford 7-0700.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
99 Park Ave., New York 16, N. Y.
Branches in principal cities

Exterior view of the offices and fabricating shops of the company.

Sackett Expands Facilities

Photograph below shows a metal turning operation in progress.



Ever since Gus Sackett founded his business back in 1897, The A. J. Sackett & Sons Company of Baltimore has been designing and building machines, processes and complete manufacturing plants for the fertilizer industry.

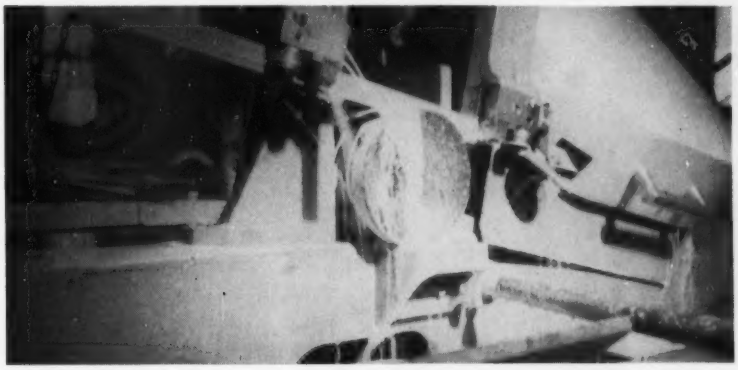
During the 63 years that have passed since this organization was established the Sackett Company has taken an active part in the creation and development of advanced methods leading to the production of better plant foods at lower cost. Many of the machines and processes

resulting from this effort have, through the years, become recognized as accepted standards by the industry. And many plants Sackett has built for its clients are known to have established unmatched records for overall manufacturing efficiency.

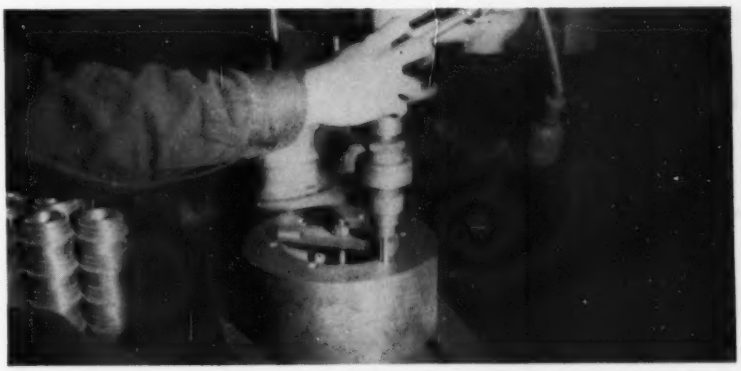
Tangible proof that this veteran organization's efforts to its industry is not going unnoticed, is most logically expressed by the consistently increasing demand for its products and services. To better fulfill the needs of its growing clientele in meeting this increasing demand, the Sackett Company has just recently completed a sizable expansion of its manufacturing facilities at Baltimore.

Now, with its shop fabricating capacity in better balance with the demands for its products, this company is in a position to serve its customers more promptly. And it can better meet the tight shipping schedules required, at times, by all fertilizer manufacturers because of the highly seasonal nature of their business.

Photograph below shows a band saw cutting off a steel trunnion shaft prior to machining.



Photograph below shows a tapping operation of a machine finished trunnion.



The photograph below is a general interior view of the steel fabricating shop showing a 400 ton press in the right foreground.

The two overhead bridge cranes have a total lifting capacity of 80,000 pounds.

PACKAGING ENGINEER. To analyze your bagging requirements, and recommend the right packer from over 50 different models.

FIELD ENGINEER. To install and service packing equipment in the field, and to assist in bag size testing.

THE RIGHT BAG. From 13 bag manufacturing plants located in key areas throughout the country.

Behind each St. Regis® bag

The new St. Regis Bag Division was developed to provide the most complete service ever offered for companies that pack and ship their products by bag. It is so complete it is called *Packaging-in-Depth*—which means, simply, that St. Regis gives you, the bag user, the best bag service available anywhere.

Count on St. Regis for the best bag for your product, the best equipment to fill it, swifter delivery, the most complete engineering staff in the industry, and research and development

BETTER SERVICE. The bags you want, when and where you want them—multiwall, textile and WPPL.

MATERIALS HANDLING. To streamline your packing operation with the latest warehousing techniques and modern auxiliary handling equipment.

PACKAGE DESIGNER. To develop new packages to suit your needs, and discover more advanced, efficient packaging methods.

you buy...Packaging-in-Depth

facilities working constantly to improve your packaging.

To sum up: our Bag Division now offers you the most *diversified* packaging service in the country through the most *specialized* people in the industry. Behind each St. Regis bag you buy stands the most complete bag service available . . . *Packaging-in-Depth!*

BAG DIVISION

St.Regis PAPER COMPANY

150 EAST 42ND STREET, NEW YORK 17, N.Y.

10,000,000 TON MARKET

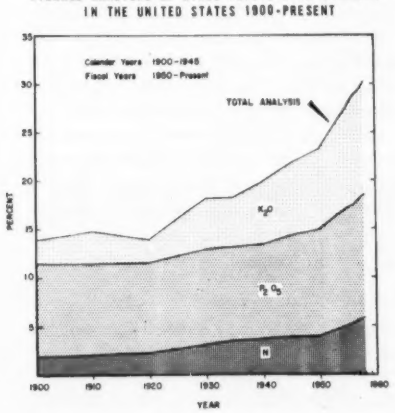
Predictions of a domestic market for plant nutrients "exceeding 10,000,000 tons" in the early 1970's are contained in a new report on Fertilizer Trends released last month by the Distribution Economics Section of Tennessee Valley Authority's Fertilizer Distribution Branch.

Intended primarily as a summary of the scope of TVA's fertilizer activities, the up-dated version of a 1958 report* touches on nearly every facet of the fertilizer industry and projects recent trends into forecasts of future developments.

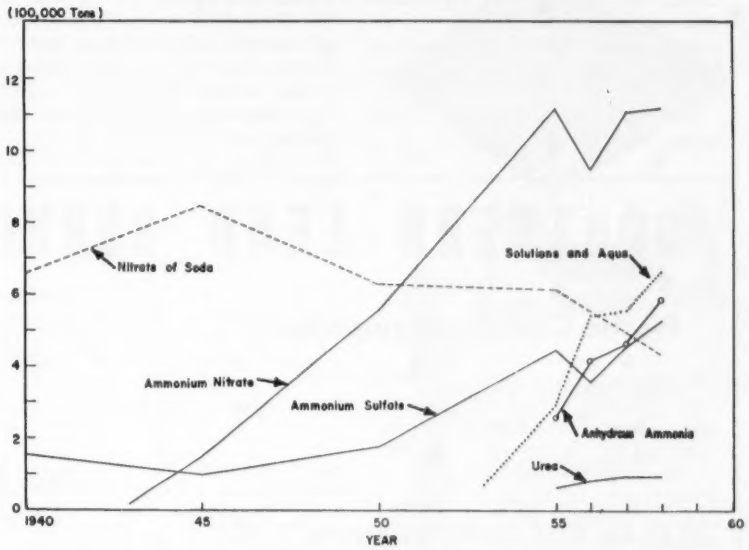
The report also points out the challenge the fertilizer industry faces in increasing its educational efforts to keep pace with and to boost the increasing use of plant foods. Citing a saving of more than $170,000,000 in the past nine years by southeastern farmers who have purchased ammonium nitrate instead of another "high-cost, low-analysis nitrogen material," the authors show that an additional $12,000,000 per year could have been saved if farmers in that area who continued using the low-analysis material had bought the same amount of nitrogen as ammonium

**The 1958 version of* FERTILIZER TRENDS *was prepared by John R. Douglas, Jr., and James M. Ranson. The 1960 edition of* FERTILIZER TRENDS *was prepared by the same two authors along with Robert D. Grisso and A. Neil Reed. Copies may be obtained through Tennessee Valley Authority's Division of Agricultural Relations at Knoxville, Tennessee.*

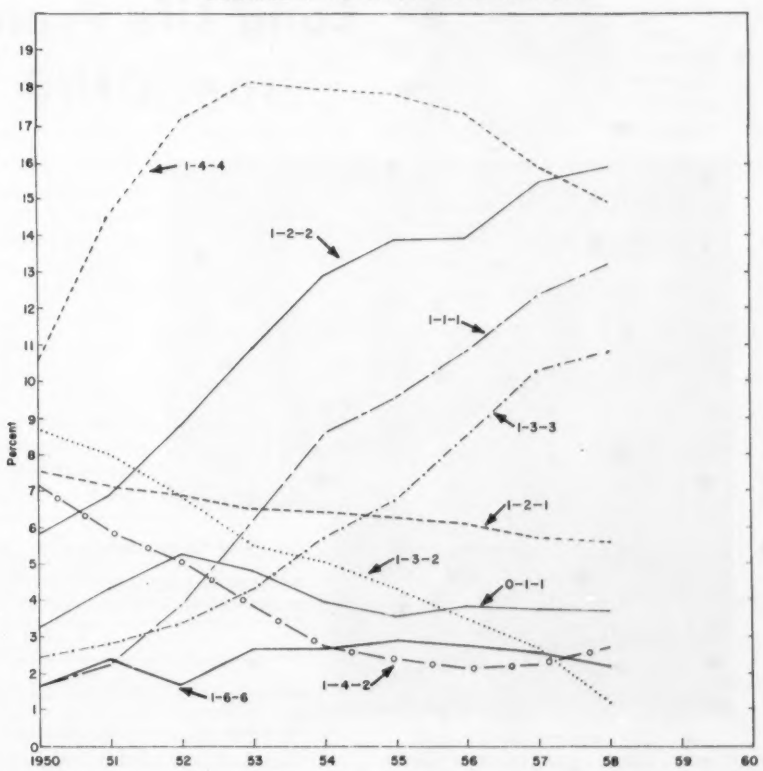
AVERAGE ANALYSIS OF MIXED FERTILIZERS CONSUMED IN THE UNITED STATES 1900-PRESENT



CONSUMPTION OF MAJOR NITROGEN FERTILIZERS AS STRAIGHT MATERIALS IN THE U.S. 1940-58



Leading Ratios Relative to Total Mixed Fertilizers Consumed in the United States 1950-58



nitrate.

Even greater savings might have been possible by using liquids and anhydrous ammonia where practical, they concluded.

Relating technological progress to commercial developments, and those in turn to changing market patterns, the 60-page booklet examines the nitrogen, phosphate and potash industries in detail, with up-to-date lists and maps pinpointing domestic production facilities and capacities for most of the fertilizer materials in use today.

The report points out that use of mixed fertilizers has expanded at a somewhat slower rate than use of straight materials since 1950, but cites the fact that mixtures still account for two-thirds of U. S. plant nutrient consumption. Perhaps the most significant change since 1950 has been the rapid increase in use 1-1-1, 1-2-2 and 1-3-3 ratios while consumption of all other leading ratios has decreased, the authors indicate. During the past decade total plant nutrient content of mixed fertilizers has increased from 23.2% to 30.2%, they show, while average ratios changed from about 1-3-2 to approximately 1-2-2 during the same period.

52 Safety Talks For Foremen

The National Safety Council has published a new volume of "Five Minute Safety Talks for Foremen."

A collection of 52 safety talks written by Robert L. Moore, superintendent of engineers, Kemper Insurance Co., the book is based on 20 years in safety engineering.

Information and quantity prices on Book 10 of the "Five Minute Safety Talks for Foremen" may be obtained from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

—of This and That . . .

_____Owen Cooper, executive vice president of Mississippi Chemical Corp. and Coastal Chemical Corp., and board chairman of First Mississippi Corp., received honorary doctor of laws and letters degree from Mississippi College; was named 'Alumnus of the Year' by Mississippi State University Alumni Association.

_____Charles Allen Thomas, board chairman, Monsanto Chemical Co., recently outlined his company's position as to an experiment aimed at easing stresses between scientists and the corporation. Part of Monsanto's laboratory-office building is arranged so researchers have their own keys and can set their own working hours because scientists must work as individuals while the corporation is a massive civilian army founded on strict discipline and teamwork. A logical solution, too, as the chemical industry is particularly dependent on brilliance in the laboratory, which is translated into new products for sale. Monsanto's experiment has been in effect about two years—too soon to know whether freedom from fixed working hours for researchers is a proper solution. "But," says Mr. Thomas, "it is gratifying to see cars outside the laboratory at night and on weekends." . . . Anybody surprised at management's viewpoint?

_____About two-thirds of all granular fertilizer made in the U.S. is manufactured with processes developed by the Tennessee Valley Authority—so testified Gen. Herbert D. Vogel, TVA board chairman, in Washington before the Subcommittee on Patents, Trademarks and Copyrights. Some 160 different firms have received over 200 licenses to use these inventions.

_____In Manila, P. I., the new members of the board of the National Economic Protectionism Association met to organize the various NEPA committees. Among them is Cayetano Pineda, who represents Atlas Fertilizers, Inc., a new member firm.

_____Dean R. Gidney, Potash Company of America, Washington, D. C., representing the fertilizer industry, has been appointed one of the five industry chairmen of the National 4-H Sponsors Council $600,000 program to support activities of the National 4-H Club Foundation.

_____Dr. James G. Horsfall, director, The Connecticut Agricultural Experiment Station, was one of a special panel of technical experts selected to review the scientific issues and administrative problems involved stemming from the use of chemicals in food production and processing with special reference to the question of carcinogenicity.

_____Dr. M. B. Gillis, director of research for International Minerals & Chemical Corp., has said that "Probably two-thirds of the world's population exists on a marginal or sub-optimum diet. Unfortunately, nations such as India, those with the lowest food intake, have also shown the least tendency to increase their food supply . . . There can be little doubt that in the future food will be an instrument of international policy . . . The movement of food from surplus areas to deficit areas is handicapped by financial and political limitations. Solutions to these problems call for world statesmanship of the highest order." Dr. Gillis listed a series of five "revolutions" in agricultural technology that have brought food in abundance and in high quality to the U. S., one of the five being increasing use of fertilizers. Today's fertilizer produces triple the yield of pre-war fertilizers, and has a bearing on livestock production through improved pastures and range land. The bulk of the world's food supply is grown on about 10 per cent of the total of 36 billion global land acres, and there is not much prospect of increasing this acreage. The other land is regarded as too dry, too humid, too cold, or infertile.

_____Last month representatives of the fertilizer industry offered to contribute a million dollars over the next two years to help develop fertilizer use programs in a campaign of the United Nations food and agriculture organization to free underdeveloped areas of hunger.

_____International Minerals & Chemical Corporation's Administrative and Research Center in Skokie, Ill. received the American Institute of Architects 'Award of Merit' for 1960 at the recent annual A. I. A. convention in San Francisco. This latest honor is the third major award for the IMC Center, which was completed the latter half of 1958.

CHANGES

V-C Buys 37th Fertilizer Plant

Virginia-Carolina Chemical Corporation's directors have approved purchase of V-C's 37th fertilizer plant. The new acquisition, a seven-year-old plant of the Neosho Fertilizer Company in Chanute, Kansas, represents V-C's farthermost fertilizer penetration into the midwest.

This plant will produce the high-analysis fertilizers demanded by midwest farmers, including V-C's new premium fertilizer product, Harvest King. It will go into operation July 1.

Spencer Plans to Add Coal Company Assets

Spencer Chemical Company announced May 18 it had approved an agreement with The Pittsburg & Midway Coal Mining Company under which Spencer would acquire all of the assets of Pittsburg & Midway in exchange for common stock. Pittsburg & Midway approved the agreement May 16. The action of both boards will be submitted to shareholders for their approval.

John C. Denton, president of Spencer, commenting on the plans, stated, "The Pittsburg & Midway Coal Mining Company should prove to be a valuable addition to Spencer Chemical Company. A number of its principal mines are ideally located to supply coal requirements to several of our major chemical plants; its reserves and installed capacity can provide additional annual sales and income; its organization will bring to the Chemical Company diversified mining skills which may serve as a basis for expansion into chemically related fields."

In commenting further, Mr. Denton indicated that Spencer Chemical Company plans to continue the coal operations of The Pittsburg & Midway Coal Mining Company as a wholly-owned subsidiary and contemplates no changes in operations.

Grace Chemical Moves S.E. Sales Office

W. R. Grace & Co., Grace Chemical division, has moved its Southeastern district sales office from Tampa, Florida, to 1402 E. Morehead, Charlotte, North Carolina. Lee Slusher will continue as Southeastern district sales manager. He will make his home in Charlotte.

Texas Gulf to Develop Delhi-Taylor Potash

Texas Gulf Sulphur Company and Delhi-Taylor Oil Corporation announced they have signed an agreement whereby Texas Gulf will acquire and commercially develop Delhi-Taylor's Utah potash properties. Delhi-Taylor will retain a 25 per cent net profits interest in the properties and will receive guaranteed advance net profit payments of $4,500,000 over a four-and-one-half year period.

A multi-million dollar potash mine and mill south of Moab, Utah, has been announced for a 1961 start. Discoveries of potash by the Dallas oil firm are said to be larger and of better grade than the deposits of potash in the Carlsbad region.

In a previous report to shareholders, Delhi-Taylor had said that reserves at Cane Creek below Bartlett Mesa, northeast of Dead Horse Point, were sufficient to produce 1,000 tons a day of material for the agricultural fertilizer industry over a period of 41 years.

Deere's Chemical Division Gets New Name

John Deere Chemical Company is the new name of the former Grand River Chemical Division of Deere & Company by action of the company's officers.

Deere & Company also is undergoing some major organizational changes and revising its fiscal policies.

In keeping with Deere's decision to extend greater autonomy to the chemical operation, the new company has its own officers and board of directors.

Directors are E. M. Cook, chairman; L. A. Murphy, Bruce Lourie, W. W. Yeandle, and R. B. Ady.

Officers are Mr. Yeandle, president; Mr. Ady, vice president; and K. B. Smith, secretary-treasurer.

Safety - - -

Safety Training Schools Repeated

Many fertilizer companies do not have an organized plan for the training of their men in plant production. Certainly they do not include any organized plan for the training of supervisory personnel in administering an accident prevention program.

In 1958, and in 1959, the National Plant Food Institute, in cooperation with the National Safety Council, sponsored five regional schools on accident prevention in fertilizer plants. These proved to be very successful so E. C. Perrine, chairman of the Fertilizer Section, National Safety Council, has announced the schools will be instituted again in 1960. This is a highly effective method to help safety directors, production managers, plant managers, and other supervisors, to become indoctrinated with the meaning of safety and the importance of safety training.

At the training sessions in both 1958 and 1959, one company had five of their supervisors in attendance. The Safety Director stated that the value to their company of the organized training received was worth the cost of the entire school.

It is the purpose of the National Plant Food Institute and the National Safety Council to improve the very discouraging accident record of the Fertilizer Industry and the safety training schools offer a very good aid in the direction of improvement.

The safety training schools are exactly what they imply. They are not conferences but should be considered an integral part of management training. Among the subjects covered are included "The Scope of Safety Work"; "Safety Education and Training Fundamentals"; "Know Your Accident Problems, Elements, Sources and Effective Measures for Preventing Accidents"; "Safety Organization—The Leadership and Responsibility for Establishing an Effective Safety Program"; "The Supervisor as a Teacher and a Leader;" "The Handling of Liquid Materials in the Fertilizer Mixing Program," and other equally important information topics.

In 1960, the safety training schools are scheduled as shown above.

All fertilizer companies are invited and strongly urged to be represented by as many supervisory people as possible at the safety training school being held in their area. Each subject is handled by a professional in that field, including members of industry, representatives from our universities, State and Federal government safety engineers, insurance engineers, and National Safety Council representatives.

You cannot run safer plants by merely buying more insurance. If active safety programs are not carried out, then the fertilizer industry can expect to continue to carry a costly record of accidents. Here is the chance to get in on a healthy concentrated effort to stop these accidents and prove that the fertilizer industry can have a good, respectable record of safety.

Schedule of 1960 Safety Schools

Region	Location	Date	Contact
Northeast	New York, N. Y.	Aug. 10-11	S. M. McCargo, G.L.F. Soil Bldg., Terrace Hill, Ithaca, N. Y.
Midwest	Chicago, Ill.	Aug. 16-17	M. Petersen, Nat'l Safety Council, 425 N. Mich. Ave., Chicago, Ill.
Southeast	Wilmington, N.C.	Aug. 25-27	W. C. Creel, Dept. of Labor, Raleigh, No. Car.
Far West	Fresno, Cal.	Oct. or Nov.	A. R. Cline, Shell Chemical, Ventura, Cal.
Southwest	New Orleans, La.	Oct. or Nov.	H. D. Haley, San Jaciento Chem. Co., Box 9747, Houston, Texas

Fertilizer Section Meets October 17

Elmer C. Perrine, chairman of the Fertilizer Section, National Safety Council, will open the Fertilizer Section's sessions at the 48th National Safety Congress and Exposition on the afternoon of October 17, in the Morrison Hotel, Chicago.

Included in the first session will be election of officers, a talk on 'Mouth to Mouth Resuscitation,' by Harry A. Veditz, Maryland Casualty Company, Baltimore; and an interesting panel discussion on disabling injuries.

Participants on the panel will include Mike Ellison, protection supervisor, Mississippi Chemical Corporation, Yazoo City, Miss.; E. J. Emond, director, Automobile Safety, Armour and Company, Chicago; R. L. Freemon, supervisor, Safety and Services department, Butler Chemical Co., Galena Park, Texas; Norman Maddux, plant manager, Florida Nitrogen Company, Tampa, Florida, and C. L. Riley, safety supervisor, O. M. Scott and Sons Company, Marysville, Ohio.

The second session of the Section will be held in the afternoon of October 18th and will cover 'Small Plant Medical Program' by Dr. G. G. Alexander, industrial medicine, Pasadena, Texas, and 'Air Pollution' by Dr. Edward J. Largent, industrial hygienist, Reynolds Metal Company, Richmond, Va.

The executive committee of the Fertilizer Section will hold its fall meeting on October 19th.

Safety Awards

Smith Douglass' South Norfolk tankage plant has been presented the National Safety Council certificate of commendation for its excellent safety record . . . 382,366 injury-free man hours from February 6, 1955 to December 31, 1959.

Smith Douglass' Texas City plant is being rewarded in 30-day periods for operation without lost-time accidents. First 30 days, cigars to all; second 30 days, more cigars; 90 days a gift each to operations, labor force, maintenance, office and laboratory. Nice gifts, too—presented by a raffle in each department. It works, says S-D safety director, G. T. Newnam.

Virginia-Carolina, Jacksonville, Fla., awarded certificate for 350,-903 injury free man hours from April 1, 1957 to December 1, 1959.

The International Scene

AUSTRIA

Big shipment due for India

A leading Austrian chemical concern which for four years has carried out an agronomic instruction campaign in India, recently concluded a skeleton agreement in cooperation with two German enterprises and one Norwegian firm, envisaging deliveries of nitrogen fertilizer to India to an annual value of two million pounds. The four supplier firms will share among themselves the contractual shipment volume of 120,000 tons of fertilizer.

CEYLON

Fertilizer plant for 1963

The Ten-Year Plan provides for the establishment of a fertiliser plant which is expected to come into operation in 1963. The project which may involve the largest expenditure on an individual plant is that proposed for producing ammonium sulphate. It will use the crude oil-cracking process.

Ceylon will be consuming 40,000 tons of nitrogen in 1963 and 80,000 tons in 1968. Ceylon's domestic needs of ammonium sulphate in 1963 will be 200,000 tons. Development thereafter will depend upon the verdict of the soil chemist whether nitrogen should be applied to the soil in the form of ammonium sulphate, ammonium phosphate or urea.

East Germany

Leuna reports exports up

Leuna Works' exports for first-quarter '60 are up 7.2% over the same quarter last year, with ammonium sulfate fertilizers heading the export list for Pakistan, India and England. Last year, Leuna exports—including fertilizers, fuels and semifinished chemical products —rose 20%.

EGYPT

Hoping for US capital

Despite the bad relations we had with Nasser, Egypt is still looking toward the US for financing of their ambitious fertilizer program. The Aswan low dam $67,000,000 plant will produce soon—at the rate of 380,000 annual tons of nitrogenous fertilizer, and by next year this will be up to 480,000 annual tons. Ahead are such projects as phosphoric acid, and other chemical products.

The development of these operations will accordingly reduce the dependence of the United Arab Republics on imported plant foods.

Among the projects: 200,000 annual metric tons of Ammonium nitrate-limestone plant food; 200,000 of ammonium sulfate; calcium superphosphate—120,000; 1200 of potassium chloride and 4000 of potassium sulfate; 500,000 of sulfuric acid; 525,000 of triple super.

INDIA

More plants in the offing

Late in April, the government signed an agreement with the Hungarian concern, Chemolimpex, to put to work in India the bio-fertilizer techniques in which Hungary excels—the utilization of agricultural wastes.

Getting ready for the Third Plan, a fertilizer target of a million tons, a technical team is visiting five European countries to study nitrophosphate production methods. Another delegation will follow before decisions are made in this field.

IRELAND

Subsidy for fertilizer users

County Leitrim has set up a subsidy plan which is intended to encourage grassland management via the use of fertilisers. It is expected this can double the use of plant food on such farms as go after the subsidy money.

JAPAN

Urea exports are brisk

Japan's target for the fertilizer year of 1959 which was 256,000 has been exceeded three months early. Hence the target for the new year, beginning in August, will be upped to 330,000 tons. This brisk trade is attributed to the fact that heavy sales to Communist China bar the shippers from taking care of Southeast Asian nations.

KOREA

Guild asks Choongjoo exclusive

The recently formed Central Fertilizer Sales Guild, made up of 2582 fertilizer dealers, and capitalized at 2.24 billion hwan, has written the Government for the right to handle exclusively distribution on urea produced by Choongjoo. This is expected to reduce costs and the price to consumers. Scrutiny of the plan is under way in the Government.

PAKISTAN

Seeking Fertilizer from Italy

Pakistani trade officials have come to Italy to negotiate the purchase of fertilizer and farm insecticides.

Their aim was to buy about 7.5 million rupees worth of insecticides, pesticides and fertilizers.

While in Italy they will contact the major producers, including Montecatini, Anic and Edison, and then will probably leave Italy for Germany and Holland.

Agreements were concluded in Karachi recently for the purchase of 10,000 tons of sulfate of ammonia from the Anic company and a further 10,000 tons from East Germany.

SPAIN

Increases fertilizer tariff

The new duty on liberalized imports of nitrogen fertilizers is 15% ad valorem, plus 420 current pesetas per metric ton. The previous duty, in effect since last July, was 36.82 current pesatas per 100 kilos.

SYRIA

City wants sewage fertilizer plant

The city of Homs wants US participation in erection of a plant to make organic fertilizers from the city sewage system. If interested, get in touch with Mazhar Husseini, Chamber of Agriculture, Homs, Syria.

UNITED KINGDOM

No anti-dumping action taken

Because German and Belgian manufacturers have agreed to raise their prices on ammonium sulphate, the Board of Trade is taking no action on the application for imposition of anti-dumping duties. On the other hand no action has been taken, either, on the protective duty removal which the Board of Trade has under consideration.

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Left to right: Mrs. Jack Lindsey; A. T. Edwards, Red Star Fertilizer Co., Sulphur Springs, Texas; Jack Lindsey, International Minerals & Chemical Corp., Shreveport, La.; Mrs. A. T. Edwards; Mrs. J. F. Fudge; Dr. J. F. Fudge, state chemist, Texas; Jimmy Powledge, National Hotels, Galveston, Texas; Mrs. Hackett and Mr. Stanley Hackett, Shreveport, La.; Mrs. Morgan & Dr. Niven Morgan, American Potash Institute, Shreveport, La.; Mrs. Frierson and Mr. Roy Frierson, Phillips Chemical Co., Tulsa, Okla.

GALVEZ HOTEL

Southwestern Conference at Galveston July 27-30

The Planning Committee of the Southwestern Fertilizer Conference and Grade Hearing met in Shreveport, Louisiana to firm up the program to be held at the Galvez Hotel, Galveston, Texas, July 27-30.

Seven speakers will be on hand to present the most comprehensive program in the history of the meeting. As in the past, this is a family meeting with wives and children invited. Reservations should be made promptly with the Galvez Hotel, Galveston, Texas.

Members of the Planning Committee are: Dr. & Mrs. R. L. Beacher, NPFI, Atlanta, Ga.; Mr. & Mrs. A. T. Edwards, Red Star Fertilizer Co., Sulphur Springs, Tex.; Mr. & Mrs. George Dunklin, Planters Fertilizer & Soybean Co., Pine Bluff, Ark.; Dr. & Mrs. J. F. Fudge, Texas State Chemist, College Station, Texas; Mr. & Mrs. Roy E. Frierson, Phillips Chemical Co., Tulsa, Okla.; Mr. & Mrs. Stanley Hackett, Shreveport, La.; Mr. & Mrs. Jack K. Lindsey, International Minerals & Chemical Corp., Shreveport, La.; Dr. & Mrs. Niven Morgan, American Potash Institute, Shreveport, La.; Jimmy Powledge, National Hotels, Galveston, Texas; and Mr. & Mrs. Tom Wright, Texas Farm Products Company, Nacogdoches, Texas.

SPEAKERS

Paul T. Truitt, president
National Plant Food Institute

Dr. M. B. Sturgis, head
Department of Agronomy
Louisiana State University

C. B. Spencer, agricultural director
Texas Cottonseed Crushers Association

Dr. John E. Hutchinson, director
Texas Agricultural Extension Service
Texas A & M College

Woody M. Miley, soil specialist
Arkansas Agricultural Extension Service
University of Arkansas

Enoch T. Nix, vice president
Bossier Bank & Trust Company
Bossier City, Louisiana

Ralph Everett, director
Empire Sales Training, Inc.
Miami, Florida

PROGRAM

Southwestern Fertilizer Conference and Grade Hearing
July 27-30; Galvez Hotel, Galveston, Texas

Wednesday, July 27:

1:00 p.m.—Registration (Fee: Men $15.00, Ladies $10.00) No one will be admitted to parties or meetings on Wednesday or Thursday without a registration badge.

6:30 p.m.—Reception honoring Technical and Control Groups

Thursday, July 28:

8:00 a.m.—Registration

9:00 a.m.—General session, **Stanley Hackett** presiding
Invocation

9:10 a.m.—**Paul Truitt,** "Activities of the National Plant Food Institute in the Southwest"

9:30 a.m.—**Dr. M. B. Sturgis,** "Importance of Fertilizer Industry"

9:50 a.m.—**C. B. Spencer,** "Improved Method of Applying Fertilizer"

10:10 a.m.—**Dr. John E. Hutchinson,** "Texas Intensified Fertility Program"

10:30 a.m.—**Woody M. Miley,** "Arkansas Demonstration and Soil Test Program"

10:50 a.m.—**Enoch T. Nix,** "With Aid of Leading Agencies"

11:10 a.m.—**Ralph Everett,** "With Better Salesmanship—How to Clinch a Skeptic"

12:30 p.m.—Ladies' Social and Luncheon

1:30 p.m.—Golf Tournament—Country Club; **Harry Carroll,** chairman

2:00 p.m.—Reception for Ladies

2:00 p.m.—Shuffleboard Tournament (Open to men and women); **Jack Lindsey,** chairman

7:00 p.m.—Social Hour

8:00 p.m.—Dinner and dance

Friday, July 29:

(No registration for this meeting)

9:30 a.m.—Annual Fertilizer Grade Hearing: Control Officials of Arkansas, Louisiana, New Mexico, Oklahoma and Texas cooperating

Saturday, July 30:

Sporting Activities: Deep sea fishing, Bay Fishing, Pier Fishing, Boat excursion and Golf

ASSOCIATION ACTIVITIES

Delmarva Convention June 25 at Ocean City

Mr. John M. Curtis, agriculture marketing specialist of North Carolina State College, will be the featured speaker at the Delmarva Peninsula Fertilizer Association convention to be held at the George Washington Hotel, Ocean City, Maryland, June 25, 1960, according to F. Nash Strudwick, of Salisbury, association president.

Mr. Curtis and his staff are responsible for orderly marketing coordination between the farmer and his markets throughout North Carolina. He works to find new markets for farm products and in turn works to develop new sources of income for North Carolina farmers. Through his efforts many farmers are getting away from the cotton or tobacco economy and diversifying into cattle, grain, and other crops.

Mr. Curtis will address the convention audience, which is open to all interested farmers, at 10:30 a.m. in the roof garden of the hotel. Noted as a colorful speaker who gets his message across, Mr. Curtis explained his program and its progress to an audience of about 250 agricultural field men at a regional conference held in Raleigh last year.

The Delmarva Fertilizer Association consists of the fertilizer manufacturers on the peninsula who endeavor to increase the income of farmers while decreasing their operating costs. The association works closely with state extension service and has several research programs in progress.

Pacific Northwest Conference in July

The eleventh annual Pacific Northwest regional fertilizer conference is to be held July 12-15 at Hotel Utah, Salt Lake City. A program crammed with constructive papers has been developed, ranging from research reports to production, to application methods — all by speakers well known in agronomy, agriculture and the industry. Entertainment has not been neglected, and a field trip to Utah State's farm occupies most of July 14.

California Conference Draws 300

"California growers of agricultural products should make full use of the widespread credit facilities offered by banks and other crop production credit agencies, in their purchases of fertilizer, pesticides, seeds, and all of the other vital commodities and services which they must use." This was the theme of **Earl Coke,** vice president, Bank of America, San Francisco, banquet speaker for the Eighth annual California fertilizer conference.

The Conference was sponsored by the CFA Soil Improvement Committee. The 300 persons interested in the more technical aspects of plant nutrition and soil fertility who were in attendance acclaimed this as being by far the best of this entire series of conferences.

C. E. "Bill" Brissenden, J. R. Simplot Company, Pocatello, Idaho, told the Conference that phosphorus is an essential element, even appearing generously in our own bones.

Dr. Kent B. Tyler, Department of Vegetable Crops, University of California, Riverside, said that the application of phosphorus as a nutrient for vegetable crops became second only to nitrogen in California.

Dr. Albert Ulrich, Department of Soils and Plant Nutrition, University of California, Berkeley, reported valuable findings in his current three year study on plant analysis research with lima beans.

Dr. Duane S. Mikkelsen, Department of Agronomy, University of California, said that the combination of California's barley, wheat, and oat crops are produced on about two million acres, and have a value of $106 million.

L. K. Stromberg, Fresno County Farm Advisor, presented a report concerning the value of potash in cotton fertilization research which has been going forward in the San Joaquin Valley for the past several years.

DeWitt Bishop, Assistant Chief, California Bureau of Chemistry, reported on fertilizer and pesticides from a regulatory viewpoint.

The panel discussion on Legume Fertilization attracted much interest and audience participation. **R. L. Luckhardt,** Collier Carbon and Chemical Corporation, Los Angeles, was panel moderator. Panel members were **Dr. William E. Martin, Dr. Merton Love,** and **Victor P. Osterli,** all of the University of California, Davis; and **Dr. William L. Garman,** The Best Fertilizers Company, Lathrop; and **Dr. Malcolm H. McVickar,** California Spray-Chemical Corporation, Richmond.

CALIFORNIA FERTILIZER CONFERENCE
Top: Head table group at annual banquet —left to right: R. L. Luckhardt; D. W. Galbraith, Agriform of Northern California, Inc., president of California Fertilizer Assn.; Earl Coke, vice president, Bank of America, San Francisco, banquet speaker; Sidney H. Bierly, general manager, CFA, Sacramento; J. H. Nelson, Nelson Laboratories, Stockton, Cal., conference co-chairman; M. E. McCollam, American Potash Institute, San Jose, chairman, CFA soil improvement committee; and Dr. Perry R. Stout, chairman, department of soils and plant nutrition, University of California, conference luncheon speaker.
Center: Conference group on field tour of the San Joaquin experimental range, 30 miles northeast of Fresno.
Bottom: Legume Fertilization panel—front row from left: Dr. William L. Garman, The Best Fertilizers Co., Lathrop, Cal.; Dr. R. L. Luckhardt, Collier Carbon & Chemical Corp., Los Angeles, moderator; Dr. William E. Martin and Victor Osterli, University of California, Davis; back row: Dr. Merton Love, University of California, Davis, and Dr. Malcolm H. McVickar, California Spray-Chemical Corp., Richmond, Cal.

Western Advisory Group Plans Three Priority Projects

Three projects will receive top priority in the Far West and Pacific Northwest in the coming year as a result of recommendations by the NPFI's Western Industry Advisory Committee which met recently in San Francisco.

These include (1) intensified soil fertility programs, including mass dryland grain demonstrations in California, (2) publicity on fertilizer and fertilization, and (3) sugar beet

nutrition, provided research guides can be worked out.

Visuals on NPFI's forest fertilization program in the Pacific Northwest were presented by F. Todd Tremblay, regional director. He also commented on the Montana Intensified Soil Fertility Program which is in progress in Flathead County. This is a pilot project which is expected to spread to other locales in the area.

Southern Control Meet June 20 at Gatlinburg

At the Riverside Hotel, Gatlinburg, Tenn. June 20-22, the Association of Southern Feed and Fertilizer Control Officials will meet for their 18th annual session. The Control Officials will meet in executive session June 20—morning, afternoon and evening. The general session the next day is open to the public and will include, in addition to other features, a talk by Paul T. Truitt, NPFI president, on the aims of the Institute. Throughout, the sessions run long and busy, with bed-rock discourses on matters affecting both feed and fertilizer control and the officials administering it.

Guests of the hotel will have country club privileges and may play golf on the championship course there. Scenic trips through the Smokies may be arranged. Off-season rates are in effect.

The New Jersey Plant Food Educational Society was organized during Farmers Week, when Rutgers and industry men met. Its purpose is to operate as an educational service to New Jersey agriculture, serving as a link between research, education and plant food industry. New Jersey people interested in joining can do so by sending $5 annual dues to Charles A. LuBow, Star Fish and Bone Fertilizer Co., 67 Laurel St. South, Bridgeton, N. J.

Shown in the photograph, elected officers and others present at the organization meeting: Seated, Jim Carroll, vice president, Chamberlin and Barclay; Stacey Randle, secretary, N. J. AES; Graham Campbell, president, Independent Mfg. Co.; Chas. A. LuBow, treasurer, Star Fish & Bone Fert. Co.; Jack Dantinne, Baugh and Sons Co. Standing, Jack Litzelman, G.L.F. Soil Building Service; Bob Lenhart, Potash Co. of America; William Reid, American Cyanamid Co.; Howard Stark, Limestone Products Corp. of America; Ken Hall, Nitrogen Division. Not in picture: Jack Satterthwaite, Reed and Perrine.

State Conferences In Southwest

Following is a list of finalized dates and places for annual fertilizer dealer and plant food conferences in the four Southwestern States for Winter 1960-61.

November 29—Oklahoma Fertilizer Conference. Oklahoma Plant Food Educational Society and OSU cooperators. Huckins Hotel, Oklahoma City, Oklahoma.

December 14—Louisiana Fertilizer Conference. Louisiana Plant Food Educational Society and LSU cooperators. Baton Rouge, Louisiana.

January 9-10—Texas Plant Food Conference. Texas Plant Food Educational Society and Texas A & M cooperators. College Station, Texas.

January 17-18—Arkansas Plant Food Conference. Arkansas Plant Food Educational Society and University of Arkansas cooperators. Little Rock, Arkansas.

Kentucky Soil Fertility Projects

"Cash in on Grass" is the theme of intensified soil fertility programs now under way in three Kentucky counties—Logan, Metcalf and Franklin.

The first phase of the program, sponsored by the Kentucky AES and the National Plant Food Institute, involves a series of fertilizer demonstrations in each of the counties.

As a means of drawing farmer attention to the demonstrations, 24" x 36" blue and white signs are being placed on the plots, and stiles are being built over fences to enable visitors to enter the plots and view the demonstrations firsthand. Slogans on the signs read, "Step into Your Future." Information on soil test results and fertilizer treatments in terms of nitrogen, phosphate and potash for each plot are being displayed.

As the results of the demonstrations are developed during the season, preparations will be made to launch county-wide soil testing programs this fall.

U. of Kentucky Broadens Agricultural Courses

Agricultural training at the University of Kentucky will have a new look soon.

The U. K. faculty has approved a new curriculum aimed at broadening students' background in the sciences, humanities, communications, and business principles.

Dr. Stanley M. Wall, associate dean of the College of Agriculture and Home Economics, said the new program is geared for demands created by increased complexity in agriculture.

The first two years of work will be about the same, but with more emphasis on a good general background.

Fertilize Best Soil Most

It is so logical we wish we had said it: "It is profitable to put the most fertilizer on the best soil," says Dr. R. L. Cook of Michigan State's soil science department.

Industry Meeting Calendar

DATE	EVENT	LOCATION	CITY
June 12-15	National Plant Food Institute	Greenbrier Hotel	White Sul. Spgs., W.Va
June 21-22	Southern Control Officials	Riverside Hotel	Gatlinburg, Tenn.
June 25	Del-Mar-Va Fertilizer Assn.	Geo. Washington Hotel	Ocean City, Md.
July 13-15	Pacific N. W. Fertilizer Conference	Hotel Utah	Salt Lake City
July 27-30	Southwest Fertilizer Conference	Galvez Hotel	Galveston, Texas
Aug. 10-11	Northeast Safety School	Park-Sheraton Hotel	New York, N. Y.
Aug. 16-17	Midwest Safety School	Safety Council Hdq.	Chicago, Ill.
Aug. 21-25	Canadian Fertilizer Association	Manoir Richelieu Hotel	Murray Bay, Que.
Aug. 25-27	Southeast Safety School	----------	Wilmington, N. C.
Sept. 29-30	Northeast Fertilizer Conference	Hotel Hershey	Hershey, Pa.
Oct. 5-6	Southeast Fertilizer Conference	Biltmore Hotel	Atlanta, Ga.
Oct. 17-18	Fertilizer Industry Safety Section	Morrison Hotel	Chicago, Ill.
Nov. 2-4	Fertilizer Industry 'Round Table'	Mayflower Hotel	Washington, D. C.
Nov. 9-11	National Fertilizer Solutions Assn.	Peabody Hotel	Memphis, Tenn.
Nov. 13-15	California Fertilizer Association	del Coronado Hotel	Coronado, Calif.
	1961		
Jan. 11-13	Agricultural Ammonia Institute	Peabody Hotel	Memphis, Tenn.

Narrow Rows Lift Soybean Yields

In several years of field trials at the Southern Experiment station, Waseca, University of Minnesota agronomists found that soybeans in rows 24 inches apart yielded up to 6 or 7 bushels more per acre than beans in 42-inch rows.

J. W. Lambert, who directed the studies, says greater yields in narrower rows are due to higher numbers of plants per acre—which the narrow spacing makes possible.

The studies also showed that in narrower rows, the best seeding rate is 100-110 pounds of soybeans per acre.

In earlier studies on this question, Lambert and other researchers found that seed weight was slightly higher for wide rows. Also, narrow rows had fewer seeds per pod and fewer pods per plant.

Agricultural researchers in other states also have evidence that narrow soybean rows will raise yields. In fact, the agronomists say one thing holding the idea back so far is lack of equipment for handling narrow rows. But where farmers can adjust their equipment for narrow spacings, it seems to be a workable idea.

Growing Tobacco Without Nicotine

Solving a problem that may arise when filters are not enough, the Atomic Energy Commission's research people have come up with a nicotineless tobacco. The trick is done by grafting tomato roots on tobacco plants. It seems isotope tracers proved that the nicotine is formed in the tobacco roots, and spreads through the leaves. The tomato roots do just fine as a foundation for tobacco leaves, simon pure as regards nicotine.

Your pipe-smoking editors think this is a pretty nasty trick to play on the comforting weed!

Pigment is "Phytochrome"

"Phytochrome" is the name given to the light-sensitive pigment recently found by ARS scientists to be the triggering mechanism for plant growth. This pigment, through its sensitivity to red and far-red light, controls growth from seed germination through flowering and fruiting.

Isolation and further study of this pigment will increase basic understanding of the physiology of plant growth and development.

HONORS

F. G. Bemis on Industrial Conference Board

F. G. Bemis, chairman of the board of Bemis Bro. Bag Co., has been reelected a board member of the National Industrial Conference Board for a term of one year.

The Conference Board, founded in 1916, is an independent and nonprofit institution for business and industrial fact finding through scientific research. In terms of everyday usefulness, the Board is a source of facts and figures bearing on all aspects of economic life and business operation. The work of the Board is made possible through the support of more than 3,700 subscribing associates including business organizations, trade associations, government bureaus, labor unions, libraries, individuals, and colleges and universities.

IMC Awards Dixon 40-Year Merit Pin

O. A. Dixon at East Point, Ga., was awarded a 40-year merit pin by International Minerals and Chemical Corp. Mr. Dixon joined IMC as a weigher in Tifton. He is now production coordinator for 16 of the company's plants in the Southeast.

County Agents Honor Wilson: Orville F. Walker (right), immediate past president of the National Association County Agricultural agents, and District Marketing Agent, Gaylord, Michigan, looks on approvingly as Ervin L. Peterson (left), Assistant Secretary of Agriculture, congratulates Louis H. Wilson, Secretary and Director of Information, National Plant Food Institute, recipient of the first citation presented by the Association in its 44-year history for his "untiring efforts . . . valued counsel and advice and productive service in the improvement of American agriculture." The presentation was made by Mr. Walker at a special luncheon meeting attended by Mr. Peterson, ranking officials of the Federal Extension Service, and officers and directors of the Association.

Shepard Receives Superior Service Award

Dr. Harold H. Shepard, chief of the Agricultural Chemicals Staff, Food and Materials Division of the Commodity Stabilization Service, received a Superior Service Award from Secretary of Agriculture Benson on May 17th. The award was for leadership in developing, improving, and publishing pesticide statistics; and for significant contributions to defense planning relating to emergency distribution of agricultural chemicals.

Under Dr. Shepard's supervision two publications well known to our readers—"The Pesticide Situation" and "The Fertilizer Situation"—are issued annually. His book, "The Chemistry and Action of Insecti-" cides," is a standard reference work. Dr. Shepard, as editor, in collaboration with other authorities in their respective fields, has issued two volumes of the manual "Methods of Testing Chemicals on Insects."

Institute Co-Sponsors Honors to Farm Editors

A nationwide contest to determine the "Newspaper Farm Editor of the Year" has been established under the sponsorship of the Newspaper Farm Editors Association and the National Plant Food Institute as an annual award, Paul T. Truitt, President of the Institute has announced.

The Institute becomes the first organization to have a jointly-sponsored contest with the newspaper farm editors.

Mr. Truitt explained that "the contest is designed to honor newspaper farm editors for their editorial contributions to efficiency in farming and for their over-all excellence in service to agriculture."

"Contributions of newspaper farm editors to improve the efficiency of agriculture too long have been taken for granted" Mr. Truitt said. "We hope the award will give deserved recognition to these outstanding writers who so effectively worked in the best interests of agriculture, which is in the best interests of the National welfare."

The award will be in the form of a scroll designating the recipient as the "Newspaper Farm Editor of the Year." The presentation will be made at the annual winter meeting of the Association in Chicago.

The contest will be open to all members of the Association and the national board of judges will be: J. H. Florea, President, American Agricultural Editors' Association and Editorial Director, Watt Publishing Company, Mount Morris, Ill.; Harold R. Lewis, Assistant Director of Information, U. S. Department of Agriculture, Washington, D. C.; and J. R. Wiggins, Vice President and Executive Editor, THE WASHINGTON POST, Washington, D. C.

The deadline for the contest has been set for September 1 and the material for entries will cover the period July 1, 1959 to June 30, 1960.

Beet Sugar King Honored by NPFI

Beet Sugar King John Domingos of Salinas, California, May 10 was awarded an achievement plaque by the National Plant Food Institute which proclaimed him "World Champion Sugar Beet Grower" before Agricultural Committee members of the San Francisco Chamber of Commerce and representatives of the chemical fertilizer and beet sugar industries.

Domingos grew a record 53.60 tons of sugar beets per acre in 1959. With a sugar content of 15.89% his beets produced a whopping 17,036 pounds of sugar per acre.

$8 in Fertilizer Adds 19 Extra Bushels

How $8 worth of fertilizer produced 19 extra bushels of wheat was described by Dr. Floyd Smith, Kansas State University agronomist.

Dr. Smith reports that in 1959 tests near Hutchinson, Kansas, unfertilized wheat produced only 13.7 bushels per acre. But when 200 pounds of a high-nitrogen 16-20-0 fertilizer was applied, the yield increased to 32.6 bushels per acre.

"Moisture was ample during the growing season," says Smith. "The soil was well supplied with potash. The nitrogen-phosphate fertilizer was applied at planting time with a combination grain and fertilizer drill."

Obituaries

Tobias E. Bradley, 69, retired in 1957 after 15 years as Midwest salesmanager for Potash Company of America, died April 17 in Peoria, Ill.

Ralph F. Crim for 31 years extension agronomist at the University of Minnesota, retiring in 1953, died April 28 at the age of 75. He was known in his region as "Mr. Crop Improvement."

Francis J. Curtis, retired vice president of Monsanto Chemical, died April 21 at the age of 65. He had been with Monsanto for 44 years when he retired.

Marlin G. Geiger, 62, executive vice president of W. R. Grace & Co., former president of Grace's Davison Chemical division and a director of National Plant Food Institute. He died of a heart attack May 13 aboard a chartered plane landing in Linden, N. J., on a trip from Baltimore, Md.

Harry E. Lustfield, 60, senior analytical chemist for American Potash & Chemical, died April 27 in Glendale, Cal.

Adolph H. Sterne, vice-president of Tennessee Corporation, Atlanta, died May 5, following a two-week illness. He had been with Tennessee Corporation for 41 years.

Runoff Carries Strontium 90 Fallout

Much radioactive strontium 90 from atomic fallout could lodge on soil particles that gather where sediments in runoff water accumulate, reports USDA soil scientist R. G. Menzel.

Of all fallout carried to soil, mainly by rainfall, about 1 percent was transported by runoff water in experiments at Tifton, Ga., and La Crosse, Wis. Although only a little strontium 90 was removed from the surface of the test plots, the element's concentration might be about 10 times greater at the base of slopes than on uphill plots, Menzel says.

Indications are that more than 1 percent of the fallout could be transported off steep slopes through use of cultivation practices that encourage erosion. But, in most agricultural areas, the fallout content of surface soil will not be greatly reduced by erosion.

The Georgia and Wisconsin Agricultural Experiment Stations cooperated with ARS in the studies.

Discovers Use for Fly Ash, Other Wastes

An East Springfield, Mass. contractor reports he has developed a method by which he hopes to provide a commercial use for waste material such as fly ash. He hopes to produce a high-grade fertilizer in both a "synthetic loam" and in capsules of concentrated fluid.

Clayton B. Fitzgerald said he has a chemical fluid, started accidentally while he was experimenting to improve portland cement—which is combined with the fly ash to provide the "loam." Except for limited use in making cement, fly ash has been a waste byproduct of power companies and other operators of big boilers.

Mr. Fitzgerald said a second phase of production will be in capsules containing his fluid in concentrated amounts—making from one pint to 50 gallons when diluted.

International Potash Research Is New Foundation

H. B. Mann to head new group formed by six U. S. producers

A new Foundation for International Potash Research has been established by six major potash producers of the United States—American Potash and Chemical Corporation, Duval Sulphur and Potash Company, International Minerals and Chemical Corporation, Potash Company of America, Southwest Potash Corporation, and U. S. Borax & Chemical Corporation—to develop programs for "efficient and beneficial use of potash" in various countries around the world.

Headquarters will be located at 1102 16th Street, N. W., Washington, D. C.

The main purpose of the Foundation is to work closely with agricultural authorities of various countries to increase efficiency of crop production, according to Dr. H. B. Mann, president of the new Foundation. Dr. Mann, who has served as president of the American Potash Institute for the past 12 years, will continue to head the Institute.

To find new markets for the American potash industry has become important, he contends, because the industry has developed its production capacity beyond the requirements of North America, now served by the research and educational work of the American Potash Institute.

Vice president of the new Foundation is J. D. Romaine, associated with potash industry research and education work for three decades.

The Foundation will work to: (1) exchange latest information on potash usage between potash industry members and agricultural authorities in the governments of the various nations served by the organization, (2) develop close cooperation in experimental work between Foundation members and official advisors and farm producers in the various countries, (3) support research and circulate educational information on beneficial results from potash usage, based on scientific findings.

Dr. Mann

Early activities of the Foundation will center largely in Japan, with some work possibly in Korea and the Philippines, Dr. Mann reports. Later plans may include some work in Mexico, Central and South America, the West Indies, Africa, and Austral-Asia.

In Japan, the president reports, the Foundation will undertake agricultural research programs in cooperation with the International Potash Institute of Bern, Switzerland. There, as elsewhere, the job will be to serve the local area by finding and showing potash needs to local advisors and farm producers in a way that will develop agricultural potash usage on a sound foundation.

Gibberellic Acid On Winter Wheat Seed

Treating seeds with gibberellic acid may be the answer for winter wheat varieties that emerge too slowly, USDA-State research shows.

In laboratory and field tests, slow-emerging varieties treated with gibberellic acid came up almost as rapidly as untreated, fast-emerging varieties in the ARS-Washington state AES studies.

CF Staff-Tabulated TONNAGE REPORTS

FERTILIZER TONNAGE REPORT (in equivalent short tons) Compiled by Cooperating State Control Officials and Tabulated by COMMERCIAL FERTILIZER Staff

	April		March		Jan.-Mar. Qtr.		July-December		January-June		YEAR (July-June)	
STATE	1960	1959	1960	1959	1960	1959	1959	1958	1959	1958	1958-59	1957-58
Alabama	-------	313,727*	182,742	217,636	256,322	296,745	180,959	199,250	846,309	734,077	1,045,574	906,798
Arkansas	126,184	95,420	68,004	83,695	99,521	113,772	58,714	63,767	289,365	226,889	353,132	289,641
Georgia	306,864	253,371	83,047	93,991	154,787	175,293	297,138	294,751	1,130,998	944,618	1,425,749	1,214,147
Kentucky	-------	130,518*	38,102	73,735	137,502	176,106	108,734	99,460	491,920	435,023	583,281	523,794
Louisiana	-------	56,162*	-------	55,383*	-------	79,260*	66,744	64,152	201,642	188,409	265,794	252,601
Missouri	-------	175,215*	36,618	109,907	81,573	165,375	272,014	362,437	563,055	420,615	926,111	755,927
N. Carolina	-------	464,818*	226,532	393,181	393,130	625,933	175,533	228,055	1,468,704	1,261,685	1,696,759	1,461,131
Oklahoma	24,349	15,936	11,463	14,928	19,520	25,801	72,511	68,848	64,738	55,594	133,586	107,400
S. Carolina	262,096	220,685	179,261	242,056	267,247	385,472	104,903	134,202	756,100	615,733	890,302	732,607
Tennessee	193,816	151,177	62,901	101,386	126,524	150,897	117,275	127,116	443,602	307,182	570,718	442,899
Texas	108,583	78,651	114,332	113,146	192,926	213,084	233,410	222,800	441,851	452,327	664,651	666,128
California		(reports compiled quarterly)			-------	317,589*	457,956	453,800	803,261	679,577	1,254,028	1,121,546
Mississippi		(reports compiled quarterly)			-------	207,139*	-------	176,371*	516,917	472,791	693,288	641,262
Virginia		(reports compiled quarterly)			221,611	315,665	141,177	160,178	618,965	549,773	779,143	690,556
Indiana				(reports compiled semi-annually)			321,956	316,341	856,316	795,506	1,172,657	1,080,465
New Hampshire				(reports compiled semi-annually)			-------	4,746*	16,143	16,053	20,889	20,019
TOTAL	1,021,892	815,240	1,003,002	1,443,661	1,950,663	2,644,143	2,609,024	2,971,528	9,509,886	8,155,852	12,475,662	10,906,901

------- (not yet reported) * Omitted from column total to allow comparison with same period of current year.

classified advertising

RATES: single issue, 8c per word; two issues, 12c per word; three issues, 15c per word: add 4c per word for each insertion beyond three issues. 'For Sale', 'Exchange' and 'Wanted' advertisements accepted for this column must be **paid in advance.**

HELP WANTED

HELP WANTED—An **Assistant Manager** wanted for a medium size long established granulated fertilizer manufacturer in one of the northern States. The applicant should be of 35-40 years of age. Have had about 5 years responsibility in formulating and granulating medium and high analysis fertilizers. A training equivalent to a degree in Chemical Engineering or Agronomy, ability to manage several factories, a good personality and ability to manage a sales force. Rapid advancement will be given to an ambitious capable man who is willing to accept this opportunity as his life work. Write fully about your past work and accomplishments and state salary expected. Your present employer will not be contacted until you give permission. Write box #9, Commercial Fertilizer, 75 Third St., N. W., Atlanta 8, Ga.

USED EQUIPMENT FOR SALE

FOR SALE: Ordinary superphosphate manufacturing equipment (used) consisting of 2-ton Stedman pan, lead measuring boot, Stedman beam scale and hopper, elevator, screw conveyors, etc. Reply Box # 4, % Commercial Fertilizer, 75 - 3rd St., N. W., Atlanta 8, Ga.

FOR SALE: 20,000 gal., horizontal, aluminum storage tank. Working pressure—60 lbs. Used for Nitrogen solution storage, located in Ohio. Box No. 8, % Commercial Fertilizer, 75 3rd St., N. W., Atlanta 8, Ga.

FOR SALE: Unused Sturtevant #9 rotary blender, 150 cu. ft. Sprout Waldron 335 cu. ft. horizontal ribbon mixer, UNUSED. Type 304 stainless steel dry material handling installation including: 1800 cu. ft. weigh hoppers, bucket elevators, shaker and screw conveyors, etc. Perry Equipment Corp., 1426 N. 6th St., Philadelphia 22, Pa.

FOR SALE: 6' x 50' and 7' x 80' Rotary Dryers, 3 - Louisville 6' x 50' Rotary Steam Tube Dryers; also Mixers, Storage Tanks, Screens, Elevators. Send us your inquiries. BRILL EQUIPMENT COMPANY, 37-61 Jabez St., Newark 5, N. J.

INDEX TO ADVERTISERS

W. H. APPLETON

—Southern Sales Manager for P.C.A.—is a graduate of Auburn University. He taught agriculture at Southern A & M Institute and served with the Alabama Department of Agronomy. Next year will mark his 25th anniversary with the Potash Company of America.

ROY P. PENNINGTON

—P.C.A.'s Canadian Sales Representative—served as professor of Soil Technology at Penn State University, is Vice Chairman of the Advisory Fertilizer Board for Ontario and is Western Ontario Director of the Agricultural Institute of Canada.

Your Men on our payroll

These men are two of the members of the P.C.A. sales team serving the fertilizer industry. While they are on our payroll, their chief responsibility is to you. Selling potash is but part of their job; the most important part is furnishing you with whatever service and information you require . . . both have the experience and background to do the job well. The P.C.A. salesman is your man . . . make good use of him.

P.C.A. "The SALT of the EARTH" RED MURIATE

New 60% Standard Muriate
New 60% Special Granular Muriate
New 60% Coarse Granular Muriate
Sulphate of Potash
Chemical Muriate - 99.9% KCL minimum

Quick Service - High Quality
Phone, write, telex, or wire us.
Phone STerling 3-4990, Washington
TWX No. - WA-331

POTASH COMPANY OF AMERICA

CARLSBAD, NEW MEXICO

General Sales Office . . . 1625 Eye Street, N.W., Washington, D.C.
Midwestern Sales Office . . . First National Bank Bldg., Peoria, Ill.
Southern Sales Office . . . Candler Building, Atlanta, Ga.

Your one stop service for

Agricultural and Industrial Chemicals

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- **SULPHUR**
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